FOOD STANDARDS
Australia New Zealand
Te Mana Kounga Kai – Ahitereiria me Aotearoa

**8-06**
**13 December 2006**

# INITIAL ASSESSMENT REPORT

# PROPOSAL P301

# PRIMARY PRODUCTION AND PROCESSING STANDARD FOR EGGS & EGG PRODUCTS

**DEADLINE FOR PUBLIC SUBMISSIONS: 6pm (Canberra time) 21 February 2007**
**SUBMISSIONS RECEIVED AFTER THIS DEADLINE WILL NOT BE CONSIDERED**
*(See 'Invitation for Public Submissions' for details)*

For Information on matters relating to this Assessment Report or the assessment process generally, please refer to http://www.foodstandards.gov.au/standardsdevelopment/

## Executive Summary

A key role of Food Standards Australia New Zealand (FSANZ) is to maintain a safe food supply. This is a dynamic process driven by the increase in domestic and global trade in food and subsequent need to improve food safety in all sectors in order to reduce the risk of food-borne illness.

The management of food safety in Australia is now addressed throughout all parts of the food supply chain to maximise food safety. This includes assessing all aspects of the production of primary produce, through to processing and sale of the product. This approach aims to improve public health and safety and ensure that consumers continue to have the highest confidence in the safety of the food they consume.

Eggs are a staple food in the diet of most Australians and over the past decade there has been a steady resurgence in the per capita consumption of eggs. In addition to shell eggs, there is a variety of egg products produced, for example egg pulp for use in baked goods.

FSANZ has commenced development of the Primary Production and Processing Standard for Eggs and Egg Products (Proposal P301) to address problems with the current risk management measures for the safety of eggs and egg products in Australia. A Standard Development Committee has been established to advise and assist FSANZ throughout this process and comprises representatives of the egg industry, State and Territory and New Zealand governments, Australian Commonwealth Government agencies, research organisations and the FSANZ Consumer Liaison Committee.

Any new standard developed in this process will form part of Chapter 4 of the *Australia New Zealand Food Standards Code* (the Code). It will be applicable to all States and Territories and conform to the principle of minimum effective regulation, where requirements will only be put in place to the extent necessary to fulfil the stated goal. Chapter 4 of the Code does not apply in New Zealand.

The standard development process requires FSANZ to develop standards based on scientific evidence and an evaluation of the costs and benefits of management options. This Initial Assessment Report summarises our current state of knowledge of these issues and raises a number of questions in relation to:

- the current operation of the egg industry;
- the existing regulatory and non-regulatory food safety management strategies;
- the hazards potentially present in eggs and egg products that could result in food-borne illness;
- the stage of the egg supply chain where hazards could be introduced; and
- egg and egg product consumption and human disease in Australia.

FSANZ seeks contributions from stakeholders to ensure that any new standard is relevant, provides benefits to consumers, is cost-effective for industry and can be enforced in a nationally consistent manner.

The data and information gathered from stakeholders at this initial stage will assist FSANZ in developing risk management options. The data will be evaluated in the risk assessment process covering the science, the economics and any social impacts. The outcomes of the risk assessment will be considered, in conjunction with the information gathered from stakeholders, in the development of the Draft Assessment Report which will set out a proposed food safety management strategy for the egg industry. FSANZ anticipates it will be seeking comment on the resulting Draft Assessment Report at the end of 2007.

## Purpose

The main purpose of the Initial Assessment Report is to explain that FSANZ is proposing to develop a Primary Production and Processing Standard for Eggs and Egg Products and to seek input into this work. Background information is also given in the Initial Assessment Report including an overview of the egg industry; a general discussion on the food safety hazards associated with eggs; and the existing food safety management strategies in place for eggs including regulatory and non-regulatory measures.

## Consultation

FSANZ seeks comments on this Initial Assessment Report. These submissions will be used to develop the next stage of the Proposal and the preparation of a Draft Assessment Report.

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## INVITATION FOR PUBLIC SUBMISSIONS

FSANZ invites public comment on this Initial Assessment Report for the purpose of developing a Primary Production and Processing Standard for Eggs and Egg Products for approval by the FSANZ Board.

Written submissions are invited from interested individuals and organisations to assist FSANZ in preparing the Draft Assessment of this Proposal. Submissions should, where possible, address the objectives of FSANZ as set out in section 10 of the FSANZ Act. Information providing details of potential costs and benefits of the proposed change to the Code from stakeholders is highly desirable. Claims made in submissions should be supported wherever possible by referencing or including relevant studies, research findings, trials, surveys etc. Technical information should be in sufficient detail to allow independent scientific assessment.

The processes of FSANZ are open to public scrutiny, and any submissions received will ordinarily be placed on the public register of FSANZ and made available for inspection. If you wish any information contained in a submission to remain confidential to FSANZ, you should clearly identify the sensitive information and provide justification for treating it as commercial-in-confidence. Section 39 of the FSANZ Act requires FSANZ to treat in-confidence, trade secrets relating to food and any other information relating to food, the commercial value of which would be, or could reasonably be expected to be, destroyed or diminished by disclosure.

Submissions must be made in writing and should clearly be marked with the word 'Submission' and quote the correct project number and name. Submissions may be sent to one of the following addresses:

**Food Standards Australia New Zealand**
**PO Box 7186**
**Canberra BC ACT 2610**
**AUSTRALIA**
**Tel (02) 6271 2222**
**www.foodstandards.gov.au**

**Food Standards Australia New Zealand**
**PO Box 10559**
**The Terrace WELLINGTON 6036**
**NEW ZEALAND**
**Tel (04) 473 9942**
**www.foodstandards.govt.nz**

**Submissions need to be received by FSANZ by 6pm (Canberra time) 21 February 2007.**

Submissions received after this date will not be considered, unless agreement for an extension has been given prior to this closing date. Agreement to an extension of time will only be given if extraordinary circumstances warrant an extension to the submission period. Any agreed extension will be notified on the FSANZ website and will apply to all submitters.

While FSANZ accepts submissions in hard copy to our offices, it is more convenient and quicker to receive submissions electronically through the FSANZ website using the Standards Development tab and then through Documents for Public Comment. Questions relating to making submissions or the application process can be directed to the Standards Management Officer at the above address or by emailing slo@foodstandards.gov.au.

Assessment reports are available for viewing and downloading from the FSANZ website. Alternatively, requests for paper copies of reports or other general inquiries can be directed to FSANZ's Information Officer at either of the above addresses or by emailing info@foodstandards.gov.au.

# INTRODUCTION

## 1. Background

Although Australia enjoys a high level of food safety protection, it, like many other nations faces the challenge of continually improving food safety. A whole-of-Government approach to the management of food safety is now being taken in Australia. Governments have agreed that Food Standard Australia New Zealand (FSANZ) addresses food safety throughout all parts of the food supply chain – a 'paddock-to-plate' approach. To this effect, FSANZ is developing a Primary Production and Processing Standard for Eggs and Egg Products (Proposal P301). To assist and advise in this process, FSANZ established a Standard Development Committee consisting of representatives from industry, consumers and jurisdictions.

In early 2006, work commenced on the Primary Production and Processing Standard for Eggs and Egg Products. With the assistance of the Standard Development Committee, FSANZ has carried out an initial assessment of the proposal and has released this Initial Assessment Report. The purpose of the Initial Assessment Report is to seek public comment on the proposal and seek information to assist in the development of the Primary Production and Processing Standard. Specific information is sought, in particular, in response to topics highlighted in boxes throughout the text.

### 1.1 Regulatory framework for development of Primary Production and Processing Standards

In 1997 the Commonwealth, State and Territory Governments agreed to a comprehensive review of food regulation throughout the whole food chain in consultation with all affected stakeholders. One of the outcomes of this review was that all domestic food standards, including those relating to the primary production sector be developed under one food regulatory system to enable a through-chain approach for the regulation of food. Previously regulations relating to the primary production sector were developed by the Commonwealth or State or Territory departments of primary industry. The responsibility of developing primary production standards was given to FSANZ.

To give effect to the new food regulatory system, the Council of Australian Governments (COAG)[1], in 2000 signed an Inter-Governmental Agreement on Food (the Food Regulation Agreement 2000[2]). This Agreement gave the power to the Australia and New Zealand Food Regulation Ministerial Council[3] (Ministerial Council) to develop policy guidelines for setting food standards.

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[1] COAG is the peak intergovernmental forum in Australia, bringing together Federal, State and Local Governments. It comprises the Prime Minister, State Premiers, Territory Chief Ministers and the President of the Australian Local Government Association. The role of COAG is to initiate, develop and monitor the implementation of policy reforms that are of national significance and which require cooperative action by Australian governments.

[2] *The Food Regulation Agreement 2000* is available from the Food Regulation Secretariat's page of the Department of Health and Ageing's website www.health.gov.au.

[3] The Ministerial Council's role is to develop domestic food regulation policy in the form of policy guidelines. The Council comprises of Ministers from all States and Territories as well as Australian and New Zealand Governments.

It also ensured that there would be appropriate representation from the primary production sector, both government and industry, on the committees involved with the development of food standards, the FSANZ Board and importantly the Ministerial Council who has the overall responsibility for the food regulatory system.

In 2002, FSANZ received direction from the Ministerial Council in the form of the *Overarching Policy Guideline on Primary Production and Processing Standards* (Ministerial Policy Guideline)[4] to develop standards for primary production sectors such as seafood, dairy, poultry, eggs, meat and plant and plant products. This is consistent with international approaches to managing food safety where it was identified that in order to ensure safe food, responsibility must be taken at all points across the food chain. Each new Primary Production and Processing Standard will be integrated into Chapter 4 of the *Australia New Zealand Food Standards Code* (the Code).

As described in the Ministerial Policy Guideline, the development of the Primary Production and Processing Standards shall take into account the following objectives of the Food Regulation Agreement 2000:

- providing safe food controls for the purpose of protecting public health and safety;
- reducing the regulatory burden on the food sector;
- facilitating the harmonisation of Australia's domestic and export food standards and their harmonisation with international standards;
- providing cost effective compliance and enforcement arrangements for industry, governments and consumers;
- providing a consistent regulatory approach across Australia through nationally agreed policy, standards, compliance and enforcement procedures;
- recognising the responsibility for food safety encompasses all levels of government and a variety of portfolios;
- supporting the joint Australia and New Zealand efforts to harmonise food standards.

In addition to developing Primary Production and Processing Standards in response to the Ministerial Policy Guideline, FSANZ is required by its legislation to meet three primary objectives which are set out in section 10 of the FSANZ Act[5]. These are:

- the protection of public health and safety;
- the provision of adequate information relating to food to enable consumers to make informed choices; and
- the prevention of misleading or deceptive conduct.

[4] To view go to http://www.foodstandards.gov.au/standardsdevelopment/ministerialcouncilpo1603.cfm
[5] A copy of the *Food Standards Australia New Zealand Act 1991* (the FSANZ Act) is available at www.foodstandards.gov.au/.

In developing and varying standards, FSANZ must also have regard to:

- the need for standards to be based on risk analysis using the best available scientific evidence;
- the promotion of consistency between domestic and international food standards;
- the desirability of an efficient and internationally competitive food industry;
- the promotion of fair trading in food; and
- any written policy guidelines formulated by the Ministerial Council.

Under the Food Regulation Agreement 2000, once any new standard has been approved and gazetted, it will be implemented under State and Territory legislation. The standard development process is described in the FSANZ Act and the different stages are detailed in Figure 1.

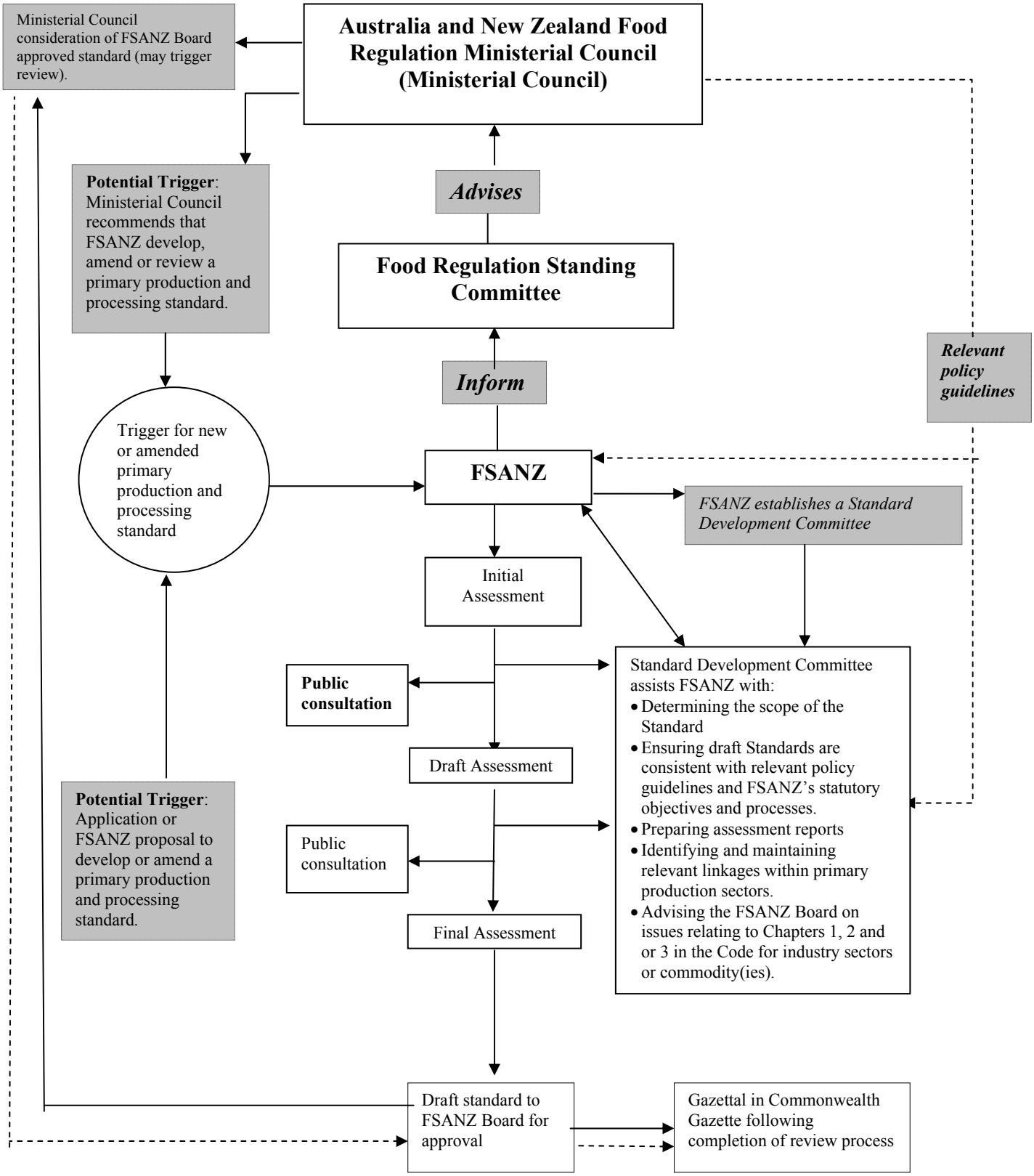


*Figure 1: How Primary Production and Processing Standards are developed by FSANZ*

## 1.2 Current Standards in the Code

The sale of eggs and egg products at wholesale, retail, food service and off farm to the public is currently regulated under the general requirements of Chapters 1, 2 and 3 of the Code[6]. The Code also regulates the processing and manufacture of egg products. Some of these requirements are applicable in New Zealand. There are currently no requirements in the Code specific to the production and handling of eggs by primary producers.

The existing requirements for eggs and egg products in the Code are given in Attachment 1. Eggs and egg products are covered by the General Food Standards in Chapter 1 of the Code. These Standards generally apply to food sold or traded at retail and wholesale level in Australia, and include labelling and compositional requirements and processing requirements for liquid egg. Chapter 1 of the Code also contains standards for contaminants, residues and micro-organisms. For example, Standard 1.6.1 – Microbiological Limits for Food requires pasteurised liquid egg to be free of *Salmonella* and Standard 1.6.2 – Processing Requirements states the times and temperatures that liquid egg products are required to be pasteurised and cooled. Most of the Chapter 1 Standards apply in Australia and New Zealand with the exception of those for processing requirements and maximum residue limits for agricultural and veterinary chemicals in food.

Chapter 2, Food Product Standards, of the Code contains requirements affecting particular classes of foods, including a specific standard for Eggs and Egg Products, Standard 2.2.2. This Standard provides definitions for eggs, egg products and visible cracks, contains requirements for the processing of egg products and restrictions on the sale of cracked eggs.

The Food Safety Standards in Chapter 3 of the Code provide for the safe and hygienic handling of food and the hygiene of premises and equipment. The applicable Standards in Chapter 3 are Standard 3.1.1 – Interpretation and Application, Standard 3.2.2 – Food Safety Practices and General Requirements and Standard 3.2.3 – Food Premises and Equipment. These Standards apply in Australia only; New Zealand has its own food hygiene arrangements.

Standards 3.2.2 and 3.2.3 do not apply to the primary production of eggs and egg products. Attachment 2 lists activities associated with producing and processing eggs and how Chapter 3 applies at these stages according to the definition of 'primary production' in the Code.

In addition to the above standards, Chapter 3 of the Code also contains a 'Model' Food Safety Standard (Standard 3.2.1) which sets out the requirements for Hazard Analysis Critical Control Point (HACCP)-based food safety programs. This standard aims to take a risk-based and preventative approach to managing food safety. The standard is currently voluntary unless mandated under specific State or Territory legislation.

[6] A copy of the Code is available at www.foodstandards.gov.au/thecode/.

## 1.3 The Egg Industry in Australia

### *1.3.1 Overview of the egg industry*

An overview of the egg industry is provided in Attachment 3. The main issues that impact on the development of regulatory measures are given below.

Eggs are produced throughout all the States and Territories in Australia with the majority of egg production occurring in Victoria, New South Wales and Queensland. There are approximately 423 hen egg producers of all sizes in Australia with an annual production of 203 million dozen eggs (AECL, personal communication). The number of egg producers has declined by approximately 20% over the past 12 years. It is predicted that new requirements for minimum cage sizes (ARMCANZ decision[7]) will result in further reduction in the number of egg producers as they will opt to exit the industry rather than upgrade their facilities (Runge, 2003).

The Australian egg industry is primarily based on eggs and egg products produced from hens. Other egg-producing avian species, such as ducks, quails, pigeon and guinea fowl form a minor part of the egg market. Little detailed information is available about the national production of eggs and egg products from these species.

Egg production in Australia is predominantly caged-based systems. Animal welfare issues and market opportunities have more recently seen a shift to alternative production systems including increases in both free range and barn-lay operations.

There are egg associations in each State, often represented by the Farmers Federation. There are several national and state-based free range associations. There are no specific organisations that solely represent cage or barn-laid egg producers. Furthermore, some smaller farmers are not members of any egg association. The peak body representing commercial hen egg producers is the Australian Egg Corporation Limited (AECL) which represents approximately 400 businesses (of which around 200 are egg producer members of AECL) that produce and distribute a range of products to the local market including cage, barn-laid, free-range and specialty eggs.

The egg business supply chain starts from the hatchery and production of parent breeders and the production of pullets and subsequently eggs. The eggs are then graded, packed and sent for distribution to the food service, retail, export or for further processing. At the end of their productive egg-laying lives, 'spent hens' may be sold for further processing, or as pets. Figure 2 shows a generic flow diagram of egg production through to retail. Further details on different egg production methods, grading, distribution and processing are given in Attachment 3.

[7] The ARMCANZ (Agriculture and Resource Management Council of Australia and New Zealand) decision, made in August 2000, stated that all cage systems needed to reach specific cage standards on or before 1 January 2008. These recommendations were incorporated into the Model Code of Practice for the Welfare of Animals (Domestic Poultry) http://www.aecl.org/Images/domestic%20poultry%20code.pdf and was reaffirmed recently by the Primary Industries Ministerial Council http://www.maff.gov.au/releases/06/pimc10.html

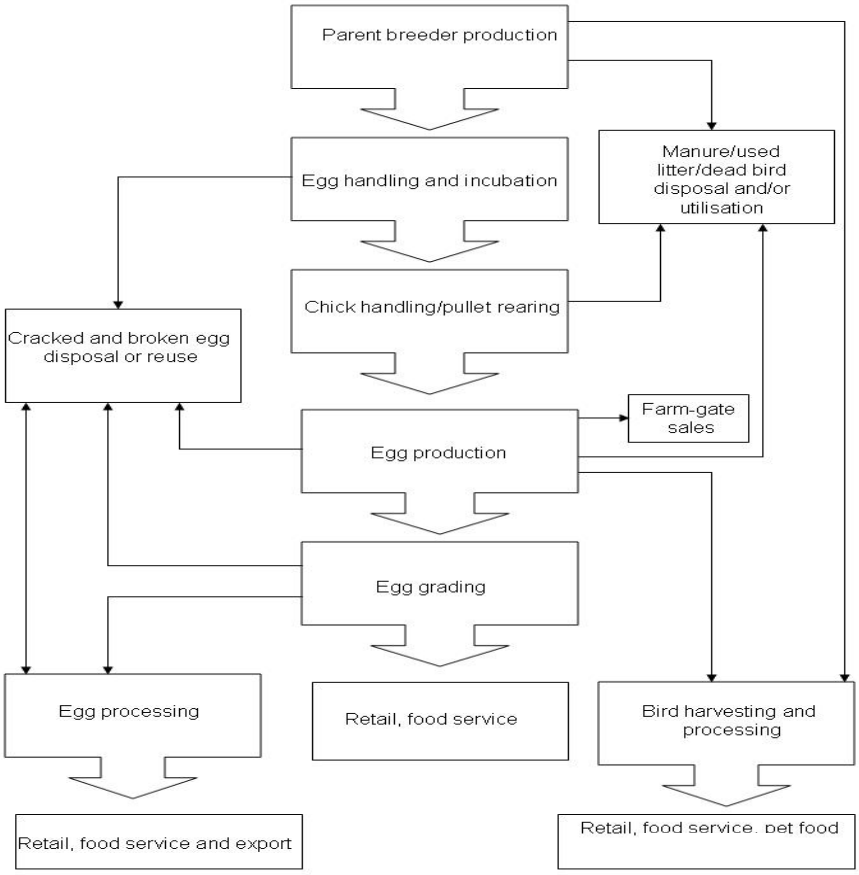


*Figure 2: Generic diagram of egg production* (McGahan et al, 2006)

The main egg market in Australia is the shell or table egg market. Only about 11 – 14 per cent of eggs are sold for product manufacture (VFF, 2003). The Australian egg market is domestically orientated and no shell eggs for human consumption are imported into Australia on quarantine grounds. Nevertheless, Australia does import and export a small quantity of egg products and export a small quantity of shell eggs. It will be important that FSANZ considers the impact (if any) that the new Primary Production and Processing Standard for Eggs and Egg Products will have on import and exporting conditions.

To assist FSANZ to make informed decisions regarding management options for the primary production and processing of eggs and egg products, comments regarding the accuracy of this information (and that in Attachment 3) are invited together with any further details or data regarding production and processing practices in the egg industry, particularly in regard to avian species other than hens.

Examples of questions for consideration:

If you are an egg producer:

- what percentage of your sales are direct from the farm to the public?
- what percentage of your eggs are sold for the table egg market? What percentage of your eggs is sold for processing?

Comment and information is sought on the use (percentage) of spent hens for human consumption.

### *1.3.2 Existing regulatory and non-regulatory food safety management requirements for the Australian egg and egg products industry.*

Information on the existing food safety management requirements for the Australian egg and egg products industry is given in Attachment 4. A summary of the requirements is given below.

#### 1.3.2.1 State and Territory Legislation

The regulation of food safety of eggs and egg products varies considerably between each State and Territory. The production of eggs and egg products is currently regulated to varying degrees by the Departments of Health and Primary Industries within each State and Territory. Under each State and Territory Food Act unsuitable or unsafe eggs and egg products cannot be sold. The sale of eggs and egg products must comply with the relevant requirements of the Code, for example, labelling requirements and the prohibition on selling cracked eggs for catering and retail.

Two States have developed legislation to address food safety concerns relating to the primary production of eggs. Queensland has developed legislation for mandatory Food Safety Schemes for the egg and egg products industries. This Scheme essentially requires primary producers of eggs to be accredited with Safe Food Queensland[8] and to implement food safety programs. Tasmania has legislation requiring the egg industry to implement on-farm Quality Assurance programs that meet specific criteria for food safety as well as animal welfare, biosecurity, environmental impact and labelling standards.

The NSW Food Authority has submitted a proposal for a regulatory scheme in NSW for certain egg businesses involved in the production or handling of eggs and egg products to be licensed, subject to periodic inspection and, in cases of higher food safety risk, required to adopt food safety programs and be subject to periodic audit of them. This scheme has yet to be approved for introduction.

Victoria is the only State that requires all food businesses, except those of minimal risk, to have food safety programs. This means that egg processing businesses operating in Victoria are obliged to comply with requirements for food safety programs that are consistent with Standard 3.2.1. Primary production businesses are not covered by these requirements.

#### 1.3.2.2 Import and export requirements

In Australia, the legislation controlling import and export of eggs and egg products is managed by the Australian Quarantine and Inspection Service (AQIS).

[8] Safe Food Queensland was set up by the Queensland Government to regulate by managing food safety risks along the food chain with the cooperation of Queensland Health, the Department of Primary Industries and Fisheries and the Australian Quarantine and Inspection Service.

There are currently strict restrictions on the import of eggs and egg products into Australia. Exporters of eggs and/or egg products must meet both the Australian export requirements and the requirements of the country of destination.

1.3.2.3 Quality Assurance Programs and Codes of Practice

In addition to State and Territory legislation there are several voluntary Quality Assurance Programs and industry Codes of Practice that currently exist for eggs and egg products. These include:

- the National Egg Quality Assurance Program (NEQAP) developed by the AECL;
- the AECL Codes of Practice relating to egg safety:
  - Shell Egg Production, Grading, Packing and Distribution, and
  - Manufacture of Egg Products[9];
  -
- the AECL Egg Labelling Guide[10];
- State and Territory Codes of Practice to accompany their Egg Schemes;
- international Codes of Practice such as the Codex Alimentarius Commission (Codex)[11] Code of Hygienic Practice for Egg Products[12];
- the Code of Practice for Biosecurity developed by the Rural Industry Research and Development Corporation (RIRDC);
- Model Code of Practice for the Welfare of Animals – Domestic Poultry;
- Model Code of Practice for the Welfare of Animals – Land Transport of Poultry[13]; and
- National Standard for Organic and Bio-dynamic Produce (2005)[14].

[9] AECL (2005) http://www.aecl.org/index.asp?pageid=486. These documents are Codes originally developed in Victoria and adopted nationally through the Australian Egg Industry Association (AEIA). They are included in the NEQAP program.
[10] A copy of the guide can be found at www.aecl.com.org/Images/Egg%20Labelling%20Guide%209%20August%202006.pdf.
[11] Codex is the international body whose purpose is protecting the health of consumers, ensuring fair trade practices in the food trade, and promoting coordination of all food standards work undertaken by international governmental and non-governmental organisations. The Commission develops food standards, guidelines and related texts such as codes of practice under the Joint FAO/WHO Food Standards Programme.
[12] This Code is currently under revision by the Codex Committee of Food Hygiene.
[13] Copies of the Model Codes of Practice can be found at http://www.publish.csiro.au/nid/22/sid/11.htm.
[14] A copy of the Standard can be found at http://www.affa.gov.au/content/output.cfm?ObjectID=192BA6DF-3BF8-43E9-98E81CFD0E3DB8CC.

In order to understand the impact of amending the current standards, information and/or comments are sought on the current regulatory and non-regulatory food safety management requirements for the Australian egg and egg products industry.

- Can you indicate whether you currently operate in accordance with either:
  - the NEQAP program;
  - the AECL Code of Practice for Shell Egg Production, Grading, Packing and Distribution;
  - the AECL Code of Practice for Manufacture of Egg Products;
  - the RIRDC Code of Practice for Biosecurity; and/or;
  - Any other Codes of Practice?
- Can you indicate the cost of complying with these guidelines?
- Can you indicate the cost of complying with current State/Territory requirements for food safety management of eggs and/or egg products?

### 1.4 Food-borne illness attributed to eggs

The egg industry in Australia produces high quality, safe eggs and egg products. However, domestic and international reports of eggs being a source of food-borne illness continue to be made.

FSANZ will examine different production systems (cage, barn laid and free range) and processing methods to assess the respective inputs and to identify where hazards can be introduced or minimised along the production chain. Further information on food-borne illness attributed to eggs is given in Section 5.

## 2. The Problem

FSANZ is developing a Primary Production and Processing Standard for Eggs and Egg Products in accordance with the policy guidance of the Australia and New Zealand Food Regulation Ministerial Council. The purpose of developing through-chain, nationally consistent risk management measures is to address the following areas of concern:

- *Current Standards in the Code –*
  Current standards in the Code are not 'through-chain' as they do not cover on-farm primary production of eggs. Additionally, FSANZ is aware the current standards have been shown to be inconsistent in their requirements which have led to compliance difficulties and perhaps inconsistent adherence to the requirements by industry.

- *Inconsistent current regulation of the egg industry across the States and Territories –*
  Each jurisdiction is responsible for food safety legislation. Currently, with no national standard to include in State and Territory legislation, the food safety requirements for eggs and egg products varies between each State and Territory. The inconsistent requirements create potential problems for domestic and international businesses wishing to trade in multiple States who must identify and adhere to differing requirements.

- *Food-borne illness attributable to eggs –*
  As previously indicated, despite the reputation for safety and quality of eggs and egg products in Australia, there is data on food-borne illness outbreaks that indicates that eggs and/or egg products are involved in a number of these illnesses. The implication of eggs in food-borne illness outbreaks suggests that current risk management measures need to be reviewed.

Comment is sought on the current risk management measures (regulatory and non-regulatory) the safety of eggs and egg products in Australia.

# 3. Objectives and Scope

## 3.1 Objectives

The objective of the Proposal for the Primary Production and Processing for Eggs and Egg Products (the Proposal) is to protect public health and safety from any potential hazards arising from consumption of eggs and egg products by developing through-chain food safety risk management measures. The measures will be set out in a standard in Chapter 4 of the Code. These will be a set of outcomes-based food safety measures to manage hazards from shell eggs and egg products for sale for human consumption. The standard would apply to egg producers and egg product processors in Australia and may apply to food businesses that import eggs or egg products into Australia depending on the scope of the final standard.

The development of the new standard aims to address specific problems identified with the current risk management measures for the safety of eggs and egg products in Australia:

- *Gaps in the current standards in the Code –*
  The development of the Primary Production and Processing Standard for Eggs and Egg Products would involve a review of the current requirements in the Code. It would allow for all requirements deemed necessary for the management of food safety of eggs and egg products to be collated into one 'through-chain' standard.

- *Inconsistent current regulation of the egg industry across the States and Territories –*
  By developing the Standard, FSANZ will aim to provide a nationally consistent standard for inclusion by the States and Territories to adopt into their legislation. In developing the proposed standard FSANZ will consider existing State and Territory legislation.

- *Food-borne illness attributable to eggs –*
  A comprehensive scientific assessment of the potential hazards in the egg and egg product production chain that may influence the safety of the final product will be undertaken by FSANZ (see Section 5). This will enable appropriate control measures to be determined and incorporated into a new national standard. The desired outcome is that the likelihood of food-borne illness attributed to the consumption of shell eggs and egg products is minimised.

FSANZ is required to develop these measures in accordance with the FSANZ Act and Ministerial Policy Guideline as discussed under Section 1.1.

The standard development process, which includes considerable industry, government and public consultation, may achieve a further goal of increasing the awareness of the food industry, government enforcement agencies and consumers of the importance of hygienic handling of eggs and egg products.

However, in achieving these goals FSANZ must be aware that it is required to avoid imposing undue social or economic costs on industry, government and consumers that outweigh the benefits of a national standard. FSANZ must also be mindful of the implications of the national standard for Australia's exporters and importers. Australia has obligations to ensure that our national standards are consistent with International Codex Standards and Codes of Practice.

## 3.2 Proposed Scope

### *3.2.1 Species to be included*

The Ministerial Policy Guideline states that Primary Production and Processing Standards may deal with specific primary production and processing sectors or commodities or groups of sectors or commodities. We propose that the development of the standard is confined to avian eggs and products made from eggs available for human consumption in Australia. This means eggs from hens, ducks, quails, pheasants, pigeons, geese and turkeys. We propose that emu and ostrich eggs are not included in the scope of the Proposal because these eggs are rarely available for sale in Australia as food. It is anticipated that ratite (e.g. emu and ostrich) products will be addressed under a separate proposal.

### *3.2.2 Activities to be included*

The Ministerial Policy Guideline states that Primary Production and Processing Standards may address food safety across the entire food chain where this is appropriate. We suggest that the Proposal considers food safety hazards and control measures from production of eggs on farm, including any hazards arising from egg layer breeding stock, through to retail sale and production of egg products such as dried, frozen and liquid egg. FSANZ also proposes that specialty eggs (e.g. Salted, Century and Balut eggs) and embryonic quail eggs are included in the scope of the Proposal.

Food businesses that wholesale, retail sale, provide food service or are manufacturers are within the scope of Chapter 3, Standard 3.2.2 – Food Safety Practices and General Requirements and Standard 3.2.3 – Food Premises and Equipment. The Proposal will examine whether these business activities are adequately controlled by the provisions of this chapter or whether additional or specific requirements are warranted.

### *3.2.3 Existing requirements in the Code*

As mentioned in section 1.1, Chapters 1 and 2 of the Code contain provisions applying to eggs and egg products. FSANZ proposes to include an assessment of these existing standards, in particular Standard 2.2.2 – Egg and Egg Products, with a view of including the requirements (as appropriate to control egg safety) in Chapter 4. Standards 1.6.1 and 2.2.2 are joint Standards with New Zealand.

### *3.2.4 Other matters*

There are important issues in regard to egg production that are outside the proposed scope but which nevertheless may have an impact on the standard development.

#### 3.2.4.1 Poultry welfare

The risk assessment will identify the hazards associated with different methods of egg production, however, welfare will be only be considered as part of the risk management options if the welfare of the bird is a contributory factor to food safety.

FSANZ will consider (food safety) relevant poultry welfare management in existing legislation and Codes of Practice to ensure that any hazard management measures in the standard will harmonise with these requirements.

#### 3.2.4.2 Biosecurity

FSANZ is conscious of the Australian poultry industry's increasing awareness of the importance of implementing effective biosecurity measures to control avian disease. FSANZ will consider existing biosecurity measures in a food safety context.

#### 3.2.4.3 Labelling issues

Labelling of eggs to indicate the method of production and incorrect labelling of reused egg cartons are examples of labelling issues of concern to the industry. However, FSANZ does not consider this a food safety issue and that ethical labelling issues are adequately legislated by Trade Practices legislation and State and Territory legislation. Therefore FSANZ will not be considering labelling issues as part of this Proposal.

Comment, with substantiation, is sought on the scope of the Proposal.

Comment, including evidence, is sought on whether the requirements of Chapter 3 adequately control food safety of eggs and egg products at wholesale, retail sale, food service and manufacturing.

## 4. Risk Analysis

FSANZ uses an internationally agreed risk analysis approach to inform its regulatory decision-making process. The use of the risk analysis approach is embodied in the FSANZ Act. In the context of food safety, risk analysis ensures the risks within a food sector are identified, managed and communicated. This approach incorporates the tripartite process endorsed by the Codex Alimentarius Commission (Codex[15]) of risk assessment, risk management and risk communication[16] as depicted in the diagram in Figure 3 developed by the World Health Organisation[17]. The three elements are discussed in the rest of the document.

[15] The Codex Alimentarius is a collection of internationally agreed food standards presented in a uniform manner and includes provisions of an advisory nature in the form of codes of practice, guidelines and other recommended measures. Codex documents are available at www.codexalimentarius.net/web/index_en.jsp.
[16] CAC (2005) *Procedural Manual*. 14, FAO/WHO: Codex Alimentarius Commission. Rome.
[17] www.who.int/foodsafety/micro/riskanalysis/en/

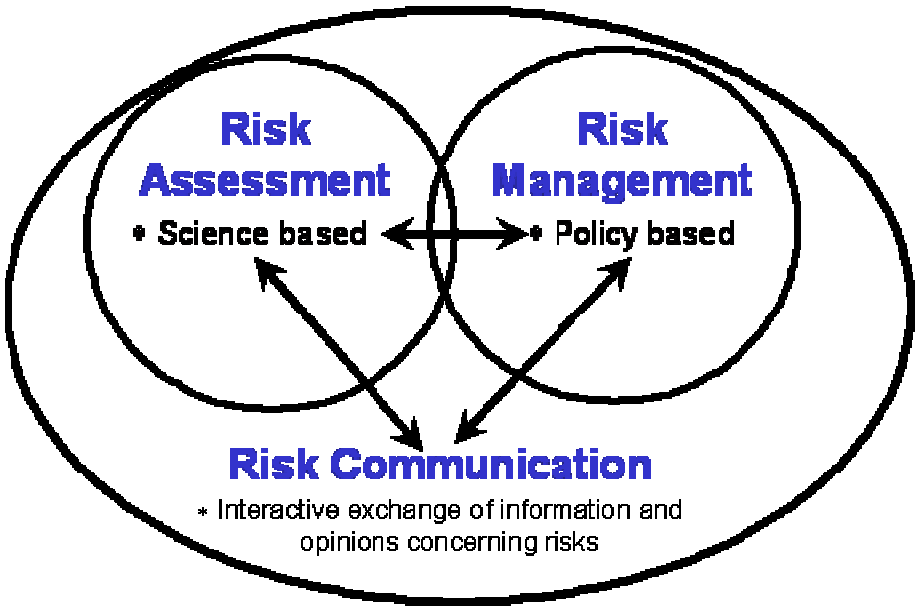


*Figure 3: The Risk Analysis framework*

## RISK ASSESSMENT

The development of a Primary Production and Processing Standard for Eggs and Egg Products will be based on a comprehensive scientific assessment of public health risks associated with the consumption of eggs and egg products.

The assessment will consider all stages in the egg supply chain, from laying through to consumption and will be undertaken in the context of the current food safety management framework. It will address shell eggs, processed egg products and specialty egg products such as Salted, Century and Balut eggs. Hazards that are of primary importance to animal health and do not have an effect on human health will not be considered. Examples include Newcastle disease and infectious bursal disease.

## 5. Potential Food Safety Issues

Initial risk assessment into the egg and egg products production chain has identified some areas that may *potentially* create a risk to the safety of the final product. They are described below.

### 5.1 Chemical hazards

There is a range of chemicals to which layer hens may be exposed and which have the potential to be carried over into the eggs. Chemical residues may also arise in eggs from the environment in which the egg is laid, during collection, packing and transportation, or during processing of egg products. Some of these chemicals may have the potential to affect the safety of eggs and egg products[18].

[18] Maximum limits for specified chemicals in eggs are set out in Chapter 1 of Code.

Layers may be exposed to natural toxins, environmental contaminants and agricultural chemicals from their feed, water and environment. This could include mycotoxins in the feed or litter, environmental contaminants such as polychlorinated biphenyls, and pesticides/herbicides used in the production of feed or in the vicinity of the egg farm. Different production systems may impact on this exposure: free-range layers may be exposed to different chemical hazards than cage and barn layers; ducks may have different exposures to hens.

Other chemicals may be used intentionally during the production of eggs. Feed and water additives e.g. enzymes, amino acids and vitamins, may be carried through to the egg. Different diets e.g. vegetarian or omega-3 enriched, may also present different chemicals to the birds.

Veterinary chemicals (including antibiotics) for use on-farm are registered by the Australian Pesticides and Veterinary Medicines Authority and permitted residue levels in food offered for sale are listed in Chapter 1 of the Code. Data on agricultural and veterinary chemical residues in eggs is available from recent National Residue Survey[19]. International data will also be considered where relevant to the Australian egg industry.

During processing, the use of chemicals appears to be largely limited to the use of egg washing solutions e.g. chlorine washing. In some cases, washed eggs are oiled with food-grade mineral oil to replace the natural oil protection removed by handling and washing. Particular processing practices e.g. the production of specialty egg products such as Salted and Century duck eggs, may add to the levels of chemical residues present in the final food product.

The impact this range of chemicals may have on the safety of eggs and egg products will be considered as part of the scientific assessment.

## 5.2 Physical hazards

Physical contaminants associated with eggs and egg products include intrinsic contaminants *e.g.* those introduced through malfunctioning of the shell glands and extrinsic contaminants *e.g.* material that is foreign to the nature of the food.

Intrinsic contaminants are unlikely to represent a hazard to consumers, whereas, extrinsic physical contaminants such as metal fragments, glass, plastic, etc have the potential to be introduced at all stages along the poultry egg processing chain and may pose a risk to public health. Sources for such contaminants include poorly maintained facilities and equipment, improper production procedures, packaging materials and poor food handling practices.

Preliminary work suggests that physical hazards are not an issue for eggs and egg products.

[19] http://www.daff.gov.au/content/output.cfm?ObjectID=D2C48F86-BA1A-11A1-A2200060B0A05746. The National Residue Survey monitors and reports to industry participants, the levels of residues and contaminants in food, animal and plant products, production inputs and the environment.

## 5.3 Microbiological hazards

A wide range of micro-organisms may be found on and in layer hens and in the egg laying environment. During the production of eggs it is possible that micro-organisms may be deposited on the surface of eggs and in some situations inside the egg. Some of these micro-organisms may be pathogenic to humans.

### *5.3.1 Salmonella spp.*

*Salmonella* is the most commonly reported aetiological agent for food-borne illness where eggs were the implicated food vehicle. In Australia, *Salmonella Typhimurium* has been identified as the dominant serovar responsible for illness associated with egg consumption.

*Salmonella Enteritidis* phage type 4 is of major concern to the egg industry internationally. This organism has caused major problems in the Northern Hemisphere where it has become established in commercial egg laying flocks and has been responsible for numerous outbreaks of food-borne illness following the consumption of raw and undercooked eggs and egg products. This organism may colonise the reproductive tissue of infected birds, and this enables the direct internal contamination of eggs with *Salmonella*. *S. Enteritidis* phage type 4 is not endemic in Australia, with most human cases reported from travellers returning from overseas (OzFoodNet Working Group, 2005[20]).

### *5.3.2 Other human pathogenic micro-organisms*

Other human bacterial and viral pathogens may potentially be associated with eggs and egg products and could include *Campylobacter spp*, *Escherichia coli*, *Listeria monocytogenes*, *Staphylococcus aureus* and *Yersinia enterocolitica*.

### *5.3.3 Factors impacting on the microbiological contamination of eggs and egg products*

Pathogens may contaminate the internal contents of an egg by two principal routes: trans-ovarian (vertical transmission) or trans-shell (horizontal transmission).

Vertical transmission occurs via infection of the bird's reproductive system *i.e.* ovaries and oviduct tissue. This can lead to direct contamination of the yolk as the egg is being formed. Vertical transmission is considered by the FAO/WHO to be the major route of *Salmonella* transmission in eggs. However, this does not apply to Australia because the particular strains of *Salmonella* that have the ability to infect the reproductive tissue and be vertically transmitted to the egg contents are not endemic in Australian laying flocks.

Horizontal transmission occurs via deposition of micro-organisms on the shell surface and their migration through the egg shell and membranes into the contents of the egg. Physical barriers include the cuticle, shell and various membranes. Penetration of micro-organisms through the shell may occur via shell pores, or cracks, or damage to the shell itself. A high level of faecal contamination on the egg surface is likely to lead to an increased risk of transmission through the shell.

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[20] OzFoodNet Working Group (2005). Reported foodborne illness and gastroenteritis in Australia: Annual report of the OzFoodNet network, 2004. *Commun Dis Intell.* 29(2): 164-190.

Many factors impact on the likelihood of an egg becoming contaminated with a pathogen. These include the health status of the bird; environmental factors during egg production e.g. exposure to micro-organisms via feed, water or pests; handling practices; processing e.g. cleaning of eggs and storage time and temperature. The impact of these factors at each stage of the supply chain will be considered in the scientific assessment of the public health and safety of eggs and egg products.

### 5.4 Epidemiological data

Data from epidemiological investigations of food-borne outbreaks indicates consumption of eggs and/or egg products have been associated with illness. The majority of outbreaks have been linked to mixed dishes believed to contain raw or lightly cooked eggs. These data will be discussed in detail in the scientific risk assessment.

Attribution of food-borne illness to eggs is often difficult to ascertain due to the retrospective and non-point source circumstances of most outbreaks; the low level of *Salmonella* contamination of eggs; and the low level of reporting of food-borne illness in the community. It is further complicated by the potential for cross-contamination from other ingredients, temperature abuse of the implicated food, and the lack of a regional database on *Salmonella* serovars found in commercial layer environments.

During the preparation of the scientific assessment of the public health and safety of eggs and egg products, there will be a comprehensive review of epidemiological data linking eggs to food-borne illness.

### 5.5 Consideration of hazards in eggs from species other than hens

The initial research has focused on the hazards potentially associated with eggs and egg products from hens. Very little information is available on the nature and extent of hazards associated with eggs from non-chicken poultry species such as ducks, turkeys, geese, guinea fowls, quails. It must be acknowledged that some hazards may be found in a particular poultry species e.g. specific strains of *Salmonella*.

## 6. Questions to be considered during the risk assessment

The questions outlined below will be addressed during the scientific assessment of the risks posed by chemical and microbiological hazards found in eggs and egg products. The questions have been developed following extensive consultations between risk assessors and risk managers. Investigation of these questions will lead to the preparation of a scientific risk assessment of eggs and egg products.

1. What are the microbiological and chemical risks to food safety posed by the consumption of eggs and egg products and the use of eggs and egg products in food in Australia?

   For the microbiological assessment this includes:

   - the contribution eggs and egg products make towards food-borne illness;
   - the main pathogens that cause egg-related food-borne illness;
   - determination of how conclusive is the epidemiological evidence.

For the chemical assessment this includes:

- consideration of inputs e.g. feed, water into the production of eggs and egg products;
- how chemicals used in the production of eggs and egg product might potentially impact on public health and safety;
- identification of areas in the current regulatory system which may require attention in relation to addressing potential public health and safety risks associated with chemicals in eggs and egg products

2. Where during the production, processing, manufacture and retail of eggs and egg products may hazards be introduced and/or their levels change, and which processing and production factors have the most significant impact on public health and safety?

3. What are the hazards and subsequent risks associated with emerging human pathogens (for example, *Salmonella* Enteriditis and Avian Influenza H5N1?)

Specific questions have been raised to assist in the risk assessment (See Appendix 5).

In order to help inform the risk assessment process, information and data (including prevalence and concentration data) is sought on :

- Both biological and chemical hazards specific to eggs and egg products obtained from hens, ducks, quail, or any other avian species;
- The potential hazards in the egg supply chain that may be introduced during on-farm production of eggs, storage and transport;
- The potential hazards that may be introduced during subsequent processing into egg products;
- The application of alternative technologies in comparison to pasteurisation.

FSANZ would appreciate it if any information and data could be supplied regarding the specific risk assessment questions detailed in Attachment 5.

# RISK MANAGEMENT

## 7. Options

Risk management considers how the risks identified by the scientific assessment are currently being managed, whether there are any gaps that need to be addressed and considers risk management measures to address these gaps. Risk management options will be developed for consideration at the Draft Assessment stage of the Proposal. These options may include regulatory approaches, such as requirements in a new standard in the Code, or non-regulatory approaches, such as guidance material for industry, or a combination of the two.

Following the scientific assessment process, FSANZ identifies and analyses the various options available to manage the risks associated with particular primary production and processing activities.

# 8. Impact Analysis

Although FSANZ's primary objective is the protection of public health and safety, any options must be analysed for their social and economic implications. In addition to a formal scientific risk assessment, FSANZ will conduct a regulatory impact analysis to assess the impact on those affected by the proposed measures. As a result of The Banks Report[21] and in accordance with the requirements of the Office of Best Practice Regulation (formerly the Office of Regulation Review), options proposed by FSANZ will need to undergo a detailed cost-benefit analysis. As part of this work, FSANZ will utilise a 'Business Cost Calculator', a mandatory tool for government to measure and assess the costs to business of compliance. The purpose of this tool is to obtain a more accurate picture of the cost of implementing regulation and ultimately to reduce the regulatory burden on affected parties.

## 8.1 Affected Parties

The groups affected by the Proposal are listed below.

### *8.1.1 Egg industry*

Members of the egg industry can include producers (all production systems), graders, packers, transporters, distributors, processors, wholesalers and retailers.

Comment and data (if applicable) are sought on the impact of the introduction of on-farm food safety requirements.

- What different approaches to food safety are undertaken by egg producers? How does industry think that these approaches may differ from producer to producer and between producers and processors?
- If you currently operate under a food safety program what was the cost to establish and introduce the program and what are the on-going costs?
- Can you estimate your current cost of complying with government regulation?

### *8.1.2 Government – Local, State/Territory, Federal*

Several States currently regulate or are introducing regulations for food safety in the egg industry. The new standard will have different implications for these States compared to those without specific regulation of egg production and processing.

[21] The Banks Report details the work of a taskforce, appointed in October 2005 by the Prime Minister and chaired by Mr Gary Banks, to identify practical options for alleviating the compliance burden on business from Government regulation. The taskforce examined and reported on areas where regulatory reform can provide significant immediate gains to business in the document *Rethinking Regulation: Report of the Taskforce on Reducing Regulatory Burdens on Businesses*. To access go to www.regulationtaskforce.gov.au/finalreport/regulationtaskforce.pdf.

Comment and data (if available) is sought on the current costs to government in monitoring and enforcing compliance with current regulations. For example,

- Number of businesses carrying out the following activities: producing eggs, sorting and grading eggs, processing egg products.
- Potential charges for licences or accreditation (where relevant, that is, NSW, Queensland and Tasmania)
- Cost of audits and inspections

*8.1.3 Consumers*

- Comments are sought on consumer perceptions of the safety of eggs, eggs that are cracked and eggs with visible dirt on them.
- Where do consumers currently obtain information on food handling and preparation practices?

# RISK COMMUNICATION

## 9. Consultation and Communication Strategies

Risk communication is an important two-way flow of information and opinion that pervades all stages of the FSANZ standard development process. Although it can involve explaining risk to target audiences, including the public, this is by no means its primary purpose. Risk communication underpins successful consultation and negotiation by fostering a feeling of partnership among stakeholders, identifying the drivers for stakeholder positions and attitudes, and generally keeping people in the loop. Risk communication strategies normally involve the development of messages and the selection of communication tools for reaching various target audiences.

### 9.1 Consultation

*9.1.1 Public consultation*

When developing a primary production and processing standard, FSANZ, in accordance with the FSANZ Act, will engage in two rounds of public consultation; at the initial and draft assessment stages of the Proposal. FSANZ encourages interested individuals and organisations to make written submissions in response to this Initial Assessment Report and the subsequent Draft Assessment Report to ensure they have an input into the standard development process and to assist FSANZ to produce a standard that will most effectively address the objectives of the Proposal as described in Section 3 of this Report. Issues raised through public submissions will be addressed, summarised and included in the FSANZ response in the Draft Assessment Report.

### *9.1.2 Standard Development Committee*

In addition to the FSANZ statutory public consultation, further consultative mechanisms will be built into the development process for the Primary Production and Processing Standard for Eggs and Egg Products. A key component of the standard development process has been the establishment of a Standard Development Committee. This Committee, as established by the FSANZ Board under the FSANZ Act, comprises representatives from all the major stakeholder groups (industry, government, research, veterinary practice and consumers)[22] and its role is to:

- assist FSANZ with the development of the Primary Production and Processing Standard for Eggs and Egg Products;
- provide scientific, technical, policy, regulatory/enforcement, cost benefit or any other input that may be relevant to the assessment reports of the Proposal; and
- communicate the progress of the standard to their sectors in the industry/government.

The Committee will meet regularly during the standard development process.

### *9.1.3 Scientific Advisory Panel*

In addition to the Standard Development Committee, FSANZ has established an Egg Scientific Advisory Panel[23] to assist the risk assessment team in the preparation of the scientific assessment. The Panel consists of a number of scientific experts from industry and government and its role is to:

- provide comment and advice on the scientific assessment undertaken by FSANZ as part of the eggs and egg products standard development process;
- provide guidance in identifying additional sources of data; and
- assist in addressing uncertainty or variability in the information underpinning the scientific assessments - which may impact on the final output.

The Panel will meet periodically during the drafting and finalisation of the risk assessment report.

### *9.1.4 Industry visits*

In the initial stages of the standard development process, FSANZ undertook a series of industry visits to develop an understanding of the egg and egg product production process and to establish relationships with egg producers and processors as well as the State/Territory enforcement agencies. FSANZ members visited several egg farms (cage, barn and free-range, hen and duck), egg product processing facilities and specialty egg producers in five States and Territories. The visits were arranged in consultation with industry and enforcement agencies and provided FSANZ with the opportunity to gain a greater understanding of the regulatory framework of those jurisdictions.

[22] A list of the members of the Standard Development Committee is given in Attachment 6.
[23] A list of the members of the Egg Scientific Advisory Panel is given in Attachment 7.

### 9.2 Communication

In addition to formal consultation, FSANZ and members of the Standard Development Committee will communicate with industry, governments and consumers during the proposal to promote awareness of the work and respond to any issues raised.

A communication sub-committee was established at the first meeting of the Standard Development Committee with members from State jurisdictions and industry. The sub-committee will work with FSANZ to develop and implement a communication plan.

More than one method of communication will be included in the communication plan given the wide geographic spread of the Australian egg industry and the diverse interests of people working within it. Also, government interest in the standard is high from a policy and enforcements point of view.

The first activities in communicating work on the Proposal have been:

- to present preliminary information about the development of the proposed national standard for eggs and egg products at the Poultry Information Exchange (PIX) conference in April 2006;
- the development of a contact database of interested parties to be kept informed of the progress of the proposed standard; and
- to produce fact-sheets to inform the industry of the upcoming standard development work. Subsequent fact-sheets will be produced as the standard progresses. These will be distributed to stakeholders and placed on the FSANZ website.

Further communication activities will occur throughout the standard development process.

### 9.3 World Trade Organization (WTO)

As members of the World Trade Organization (WTO), Australia and New Zealand are obligated to notify WTO member nations where proposed mandatory regulatory measures are inconsistent with any existing or imminent international standards and the proposed measure may have a significant effect on trade.

This issue will be fully considered at Draft Assessment and, if necessary, notification will be recommended to the agencies responsible in accordance with Australia's and New Zealand's obligations under the WTO Technical Barrier to Trade (TBT) or Sanitary and Phytosanitary Measure (SPS) Agreements. This will enable other WTO member countries to comment on proposed changes to standards where they may have a significant impact on them.

# CONCLUSION

## 10. Closing remarks

This Initial Assessment Report provides the first opportunity for stakeholders to comment on and supply information and data to FSANZ regarding a Primary Production and Processing Standard for Eggs and Egg Products.

FSANZ welcomes and encourages stakeholder input. The comments, information and data provided during this consultation will be considered in combination with the scientific risk assessment and impact analysis during the draft assessment stage of the Proposal to develop risk management options. A draft standard will be developed based on the preferred risk management option. This will be included for consideration in the Draft Assessment Report, which will be the next formal opportunity for stakeholders to comment.

**Attachment 1**

## Main Standards applicable to eggs and egg products in the Code[24]

### Chapter 1 – General Food Standards

Standard 1.2.3 – Mandatory Warnings, Advisory Statements and Declarations

Unpasteurised egg products must have an advisory statement that the product is unpasteurised.

Standard 1.3.1 – Food Additives

No additives are permitted to be added to eggs. Specified additives are permitted to be added to liquid egg products, frozen egg products and dried and/or heat coagulated egg products.

Standard 1.4.1 – Contaminants and Natural Toxicants

Metal contaminants are not permitted in eggs or egg products. Non-metal contaminants permitted for eggs and egg products are: acrylonitrile (0.02 mg/kg) and vinyl chloride (0.01 mg/kg), and polychlorinated biphenyls (0.2 mg/kg in total).

Standard 1.4.2 – Maximum Residue Limits (Australia Only)

A range of maximum residue limits and extraneous residue limits apply to eggs.

Standard 1.6.1 – Microbiological Limits for Foods

Pasteurised egg products must be free from *Salmonella*.

Standard 1.6.2 – Processing Requirements

Liquid whole egg or mixture of yolk and white, liquid egg yolk and liquid egg white cannot be sold or used in the manufacture of food unless they have been pasteurised and then cooled at the times and temperatures specified.

### Chapter 2 – Food Product Standards

Standard 2.2.2 – Eggs and Egg Products

Egg products must be pasteurised or equivalent; or

Can be sold to non retail where the egg product is an ingredient of food that will be pasteurised.

[24] For the complete list of the Standards contained in the Food Standards Code visit: http://www.foodstandards.gov.au/thecode/foodstandardscode.cfm

Cracked eggs are prohibited from being sold to retail or catering unless pasteurised.

**Chapter 3 – Food Safety Standards**

The Food Safety Standards have been developed to ensure that food sold in Australia is safe and suitable to eat.

Standard 3.1.1 – Interpretation and Application

This Standard is the introductory standard for all the Food Safety Standards. It defines the terms that are used in more than one of the Food Safety Standards and explains the meaning of 'safe and suitable food'. Standard 3.1.1 states that food businesses must comply with the Food Safety Standards and food handlers must comply with those requirements relevant to them.

Standard 3.2.2 – Food Safety Practices and General Requirements

This Standard sets out specific food handling controls related to the receipt, storage, processing, display, packaging, transportation, disposal and recall of food. Other requirements relate to the skills and knowledge of food handlers and their supervisors, the health and hygiene of food handlers and the cleaning and maintenance of food premises and equipment. If complied with, these requirements should ensure that food does not become unsafe or unsuitable.

Standard 3.2.3 – Food Premises and Equipment

This Standard sets out the requirements for food premises, fixtures, fittings, equipment and food transport vehicles. Food businesses that comply with these requirements will find it easier to meet the requirements of Standard 3.2.2 *Food Safety Practices and General Requirements*.

**Chapter 3 Standards apply to:**

- the sale of eggs from the farm gate
- the manufacture of egg products
- the storage, washing and packing off farm

**Chapter 3 Standards do not apply to:**

- the activities of egg producers
- the transport of eggs from farm
- the storage, washing and packing on farm

## Attachment 2

# The application of Chapter 3 Standards to producing and processing eggs

| Activity | Regulated by Chapter 3 |
|---|---|
| Production of layers and stock feed on and off an egg farm[25] | **No** – by definition these activities are considered 'primary production' under the Code. |
| Egg production on farm | **No** – considered 'primary production'. |
| Farm sale to public | **Yes** – the definition of 'primary production' in the Code excludes farm-gate sales to the public. Therefore, these sales *are* covered by the requirements of Chapter 3. |
| Storage, washing and packing on farm | **No** – considered 'primary production'. |
| Collection of pulp on farm | This is open to interpretation – If it is considered 'treating' then it is not covered by Chapter 3, however, if it is considered 'substantial transformation' then it is covered by Chapter 3. |
| Sorting, grading, candling oiling and washing **on farm** | **No** – these activities are interpreted to be 'treating' therefore they are considered 'primary production'. |
| Transport from farm | **No** – considered 'primary production'. |
| Sorting, washing, grading etc and packing of table egg **off farm** | **Yes** – not considered 'primary production'. |
| Manufacture of pulp and egg products **off farm** | **Yes** – not considered 'primary production'. |
| Distribution of pulp and table eggs | **Yes** – not considered 'primary production'. |
| Retail sale of table eggs | **Yes** – not considered 'primary production'. |
| Use of pulp and cracked eggs in other products | **Yes** – but note that cracked eggs are not permitted for sale for retail and catering uses however they can be sold for further processing equivalent to pasteurisation to meet end the microbiological requirements of Standard 1.6.1. |
| Import of egg products/shell eggs (where permitted) | **Yes** – the use and sale of these products are covered by Chapter 3. |

[25] 'farm' is used for the premises where the egg is produced.

**Attachment 3**

## Overview of the egg industry in Australia

Egg production in Australia has changed dramatically during the last 50 years. Prior to World War II, the industry relied mainly on backyard free-range operations. This system evolved, post war, into the predominantly cage-based system seen today. Animal welfare issues and market opportunities have more recently prompted a return to alternative production systems including increases in both free range and barn-lay operations. This trend is in line with the United Kingdom and New Zealand, where the free-range markets are also expanding.

The Australian egg industry is primarily based on eggs and egg products produced from chickens. Other egg-producing avian species, such as ducks, quails, and guinea fowl, form a minor part of the egg market and, unless specified, further references are to chickens' eggs.

### Egg Production in Australia

Eggs are produced throughout all the States and Territories in Australia (Table 1). The majority of egg production occurs in NSW and Victoria although the gross value of production is slightly higher for egg producers in NSW, due to larger flock sizes.

Over the past decade, there have been variations in flock sizes within the different States and Territories; NSW, Victoria and Queensland have increased flock sizes whereas SA, WA, Tasmania and NT have seen decreases in their flock sizes by (AECL, 2003).

**Table 1: Number of egg producers and flock sizes throughout Australia as at June 2005 (ABS, 2006)**

| | Producers | % | Egg Production (million) | % | Flock size (millions) | % |
|---|---|---|---|---|---|---|
| Australia | 423 (325 – 551) | | 202.653 (188 – 221) | | 13.175 | (12.982 – 13.414) |
| NSW[1] | 139 | 32.9 | 57.794[3] | 28.5 | 3.708 | 28.1 |
| Victoria[2] | 117 | 27.7 | 56.768 | 28 | 3.308 | 25.1 |
| Queensland[1] | 55 | 13 | 42.548 | 21 | 3.54 | 26.9 |
| Western Australia[1] | 51 | 12.1 | 16.366 | 8.1 | 1.037 | 7.9 |
| South Australia[1] | 38 | 9 | 18.739[3] | 9.3 | 0.997[4] | 7.6 |
| Tasmania[1] | 19 | 4.5 | 5.356 | 2.6 | 0.298 | 2.3 |
| Northern Territory | 3 | 0.7 | 1.062 | 0.5 | 0.067 | 0.5 |
| ACT | 1 | 0.2 | 4.02 | 2 | 0.22 | 1.7 |

[1] estimate has a relative standard error of 10% - <25%
[2] estimate has a relative standard error of 25% - <50%
[3] estimate has a relative standard error of 10% - <25%
[4] estimate has a relative standard error of 10% - <25%

There are approximately 423 egg producers in Australia who turnover more than $5000pa from their eggs, with an annual production of approximately 203 million dozen eggs (ABS, 2006). The number of egg producers in Australia has dropped from 566 to 423 over the past twelve years (AECL, 2003, 2006[a]).

It is predicted that with the introduction of the ARMCANZ decision[26], the number of egg producers will drop further as they will opt to exit the industry rather than upgrade facilities (Runge, 2003).

Overall, the gross value of hen egg production in Australia (at wholesale prices in the market place) was estimated at $340 million for 2005/06 and is predicted to be $335 million for 2006/7 (ABARE, 2006). The gross value of production at the farm gate is approximately $40m below the wholesale production value (AECL, 2006)[a].

There has been a shift in the types of production facilities in recent years (Table 2), with significant increases in free-range farms in all States. The number of barn-laid production systems have also increased in NSW, Victoria and Western Australia. The percentage distribution of production facilities, and how they are marketed, are shown in Table 3. In the current expanding non-cage market, 84% of non-cage facilities have farms with more than 10,000 birds (Runge, 2006).

**Table 2: Proportion of egg production systems***(QDPI, 2006)

| Egg production system | Number of layers able to be housed (million) | | | |
|---|---|---|---|---|
| | CAGE | BARN-LAID | FREE-RANGE | TOTAL |
| **Australia** | 12.302 | 0.903 | 1.366 | 14.57 |
| NSW | 4.822 | 0.306 | 0.633 | 5.761 |
| Victoria | 2.656 | 0.246 | 0.288 | 3.19 |
| Queensland | 2.683 | 0.124 | 0.198 | 3.005 |
| Western Australia | 1.221 | 0.084 | 0.128 | 1.433 |
| South Australia | 0.623 | 0.063 | 0.077 | 0.763 |

* in 2004

**Table 3: Percentage of egg production types (AECL, 2006)**

| Egg production method | Approximate % of total egg sales | Propriety label % | Generic label % |
|---|---|---|---|
| Conventional cage | 75.2 | 25.6 | 74.4 |
| Free-range | 14.5 | 80.1 | 19.9 |
| Barn laid | 6.1 | 64.8 | 35.2 |
| Specialty[27] and Organic eggs | 4.2 | n/a | n/a |

## The Australian egg industry

The Australian egg industry was traditionally a regulated industry with State egg marketing boards enforcing hen and production quotas. In the late 1980s production and marketing of the industry began to be deregulated.

[26] The ARMCANZ (Agriculture and Resource Management Council of Australia and New Zealand) decision, made in August 2000, stated that all cage systems needed to reach specific cage standards on or before 1 January 2008. These recommendations were incorporated into the Model Code of Practice for the Welfare of Animals (Domestic Poultry) http://www.aecl.org/Images/domestic%20poultry%20code.pdf and was reaffirmed recently by the Primary Industries Ministerial Council http://www.maff.gov.au/releases/06/pimc10.html

[27] These covers 'enhanced chicken eggs' where hens are raised on a specific diet to influence the nutritional composition of the egg. For example Omega-3 eggs (AECL, personal communication). Non-organic specialty eggs are laid in cages.

Since then, the industry has undergone structural changes which have lead to a reduction in production, lower margins in the production end of the supply chain and a greater share of returns in the retail sector.

Until 2003, The Australian Egg Industry Association (AEIA) was the peak body representing commercial hen egg producers and their associated egg products, processors and organisations that marketed eggs and egg products. The AEIA was dissolved in 2002. The Australian Egg Corporation Limited (AECL) commenced in February 2003. AECL is a producer-owned company which integrates marketing, research and development and policy services for its stakeholders. It is mainly funded through statutory levies collected under the under the *Primary Industries (Excise) Levies Act 1999* and *Primary Industries Levies and Charges Collection Act 1991*, and Australian government matching funds for the purposes of research and development.

Levies totaling 40.37c per bird are imposed to accommodate promotion, research and development, residue testing and animal health issues, as follows:

- 32.5 cents per laying chicken bred or purchased for use in the commercial production of eggs
- 7.2 cents per laying chicken is directed to the AECL for R&D;
- 0.4 cents per laying chicken is directed to the National Residue Survey; and
- 0.27 cents per laying chicken is directed to the Animal Health Australia.[28].

Membership of is free to all levy paying egg producers. AECL represents approximately 400 businesses (of which around 200 are egg producer members of AECL) that produce and distribute a range of products to the local market including cage, barn-laid, free-range and specialty eggs.

Representation of the egg industry varies between States. Some States have egg associations or may be represented by the Farmers Federation. Although there are several free range associations, no specific organisation solely represents cage or barn-laid egg producers. Furthermore, some smaller farmers are not members of any association.

The egg industry is made up of a few large companies and many small companies. There are three major egg marketing groups in Australia: Sunny Queen (Queensland), Pace Farm (NSW) and Novo Foods (Victoria, WA, SA and Tasmania). These companies employ a range of different business models in terms of integration of production, grading, packing and marketing. The national industry has progressively evolved from state-based supply. However, despite the expansion of certain packing and marketing enterprises, one group alone does not service retail on a national basis. Marketing data over the past 12 months indicates that approximately 25% of all eggs produced were sold through the retail market (AECL, personal communication).

The main egg market in Australia is the shell or table egg market. About 11-14 per cent of eggs are sold for product manufacture (VFF, 2003).

[28] Animal Health Australia is a not-for-profit public company established by government and livestock industries. It was established to ensure that Australia's national animal health system delivers competitive advantage for Australia's livestock industries.
http://www.animalhealthaustralia.com.au/shadomx/apps/fms/fmsdownload.cfm?file_uuid=30AE7BEF-E946-EAF7-D80C-D9D0EFDBC341&siteName=aahc

More recently, there has been an increase in the types of table eggs produced to meet demand from niche market forces, for example, organic eggs, omega 3-enriched eggs and vegetarian eggs.

Egg product manufacturing is large scale, capital intensive and involves the use of specialist manufacturing, storage and laboratory facilities. Eggs used for the manufacture of commercial egg products are either those not considered fit for sale in shell egg form, for example they may be cracked, misshaped or are surplus to the requirements of the market.

**Per capita egg consumption**

The consumption of eggs in Australia has dropped considerably since the late 1940s and in the mid 1990s, annual per capita egg consumption decreased to 132 (Table 4). This may have been due to increased concern about dietary cholesterol in the 1980s. More recently, improved knowledge and understanding of the dietary benefits of eggs, based on scientific evidence, has led to eggs being awarded the National Heart Foundation 'tick' (AECL, 2005a Combined with improved generic egg marketing by AECL, egg consumption in Australia has begun to rise again, with the latest figures showing an increase in average annual consumption to 168 eggs per person (AECL, 2005a). In comparison to other countries, Australia's egg consumption per capita is still low, for example, per capita egg consumption in Hungary and the U.S.A. was 296 and 255 respectively in 2005.

**Table 4: Apparent per capita egg consumption in Australia** (AECL, 2003)

| | No. of eggs |
|---|---|
| **1938-39** | 243 |
| **1948-49** | 255 |
| **1958-59** | 206 |
| **1968-69** | 222 |
| **1978-79** | 220 |
| **1988-89** | 146 |
| **1992-93** | 151 |
| **1996-97** | 132 |
| **1998-99** | 137 |
| **2001-02** | 135 |
| **2005**[29] | 168 |

**The world egg market**

There are approximately 4.93 billion egg-laying hens in the world and an estimated 53.4 million tonnes of table eggs were produced in 2002. The major egg producing countries in 2002 were China, USA and India. Major international egg producing countries are given in Table 5. Recent figures for international flock sizes are given in Table 6.

[29] AECL, 2005[a]

**Table 5: Egg production profiles of major egg producing countries for 2002** (AECL, 2003)

| Country | Thousands of tonnes |
|---|---|
| China | 20,250 |
| USA | 5,128 |
| India | 2,000 |
| Italy | 717 |
| Netherlands | 653 |
| Thailand | 504 |
| Canada | 390 |
| **Australia** | 171 |
| Denmark | 81 |

**Table 6: International flock sizes and per capita consumption** (IEC, 2006)

| | Flock Size (million) | | Per capita consumption | |
|---|---|---|---|---|
| **Country** | **2005** | **2004** | **2005** | **2004** |
| U.S.A. | 216.12 | 218.51 | 255 | 257 |
| Japan | 108.73 | 104.97 | N/A | 330 |
| Brazil | 72.54 | 62.83 | 130 | 130 |
| France | 47.56 | 48.12 | N/A | 253 |
| Italy | 44.0 | 44.7 | 223 | 222 |
| Germany | 41.33 | 41.57 | 209 | 209 |
| Spain | 31.74 | 35.3 | N/A | N/A |
| United Kingdom | 30.45 | 32.67 | 176 | 174 |
| Netherlands | 30.43 | 27.14 | 183 | 181 |
| Canada | 22.61 | 23.35 | N/A | 185 |
| South Africa | 21.87 | 21.00 | 107 | 105 |
| **Australia** | **13.18** | **11.05** | **165** | **161** |
| Belgium | 7.34 | 10.06 | N/A | N/A |
| Austria | 5.47 | 5.78 | N/A | 228 |
| Sweden | 5.43 | 5.23 | N/A | 202 |
| Hungary | 4.32 | 5.44 | 296 | 296 |
| Portugal | 4.10 | 4.48 | N/A | 178 |
| Finland | 3.25 | 3.15 | 153 | 153 |
| Denmark | 2.80 | 2.86 | 244 | 241 |
| New Zealand | 2.44 | 2.62 | 222 | 211 |
| Norway | 2.08 | 2.68 | N/A | N/A |
| Ireland | 1.75 | 1.8 | N/A | N/A |

Global egg production has a strong domestic orientation despite the long shelf life of many egg products. The shell egg market is still the dominant sector, particularly in less developed economies (DPI Victoria, 2000).

The value of Australian **exports** in 2005-06 was $4.27 million mostly as processed egg products. Major destinations were the United States of America, Syria, the Philippines and section 1.3.2.2 Singapore.

The value of **imports** into Australia in 2005-06 was $7.5 million, as processed egg products. Major import sources (by value) are the United Kingdom, Canada and NZ.

As indicated in Table 7 and section 1.3.2.2, shell eggs for human consumption in Australia are not imported under quarantine grounds and fertile eggs for breeding are imported under strict quarantine. Biosecurity Australia are currently undertaking an import risk analysis to assess the biosecurity risks of a range of edible eggs and egg products, including preserved duck eggs (import and export requirements for eggs and egg products are covered elsewhere).

**Table 7: Egg Trade in Australia (AECL, 2006)**

| **Exports** | **Quantity of eggs (tonnes)** | |
|---|---|---|
| | **Jan – Jun 2005** | **Jul – Dec 2005** |
| Shell eggs | 111.6 | 750.2[30] |
| Egg products (liquid and dried) | 661.7 | 855.2 |
| **Imports** | **Jan – Jun 2005** | **Jul – Dec 2005** |
| Shell eggs | - | - |
| Egg products (liquid and dried) | 660.3 | 897.5 |

**Egg production, grading and distribution**

Figure 1 shows a generic flow diagram of egg production, from breeder production through to retail.

[30]The increased demand for Australian eggs in late 2005 was due to outbreaks of Avian Influenza in regular supplier markets in Asia.

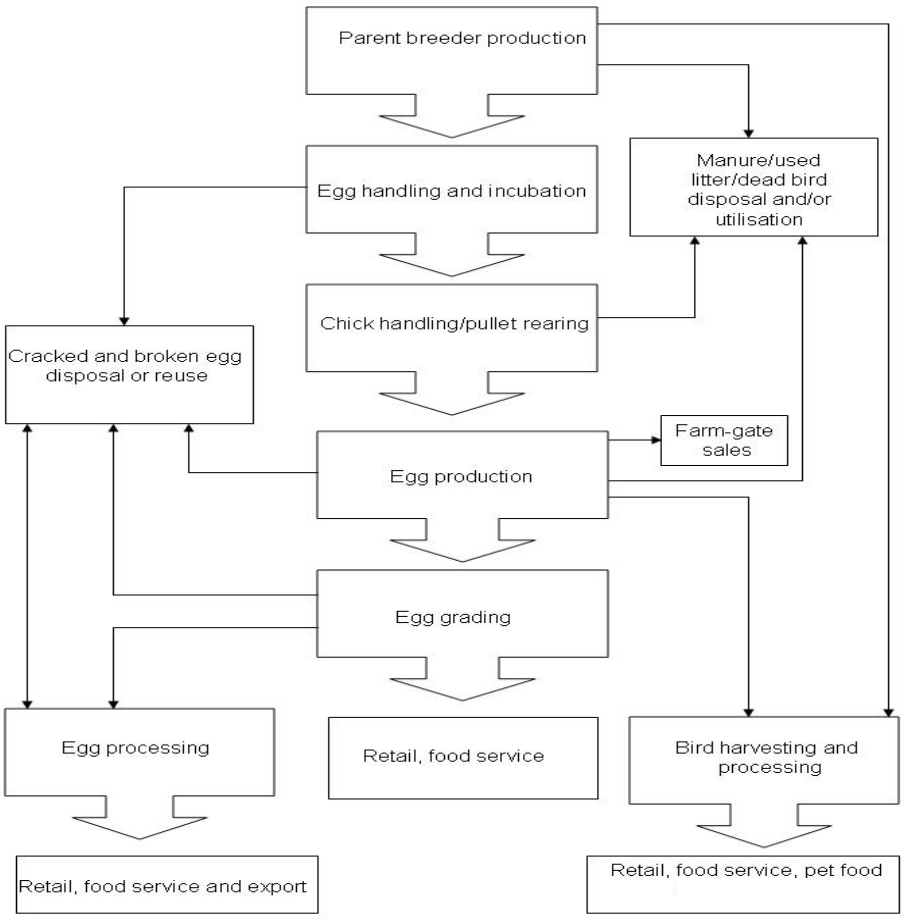


*Figure 1: Generic diagram of egg production (McGahan et al, 2006)*

**Commercial layer breeding farms**

Eggs are produced by specially selected layer strains. There are three major breeds of chickens used in the Australian egg industry, HISEX, Hy-Line Brown and ISA Brown. These strains were first imported into Australia over 15 years ago and are currently imported every few years as 'great grandparents' either through government (Torrens Island) or private importation quarantine facilities.

The three breeds mentioned account for approximately 98% of all egg layers in Australia and as a result of perceived consumer preference are all brown egg layers. It is interesting to note that in the USA predominantly all layers are white eggs producers because of consumer preference. There are very few white eggs produced in Australia and these eggs are sold as the preferred egg of choice to particular Asian communities, in particular during traditional celebration periods. The benefits of imported layers over local indigenous strains includes earlier onset of lay, high sustainable level of production, high level of recovery and a smaller body weight birds with superior feed conversion efficiency.

Breeding farms keep breeding hens and roosters to produce fertile eggs. The fertile eggs produced by the parent stock are collected daily and stored for transport to a hatchery. The parent stock is productive for about 12 months, after which it is removed for meat processing.

The used manure or litter is then generally cleaned from the sheds at the end of each 12-month cycle and the process repeated. Due to the different requirements of egg farms and breeder farms, egg producers often purchase day old chicks or young hens (pullets) rather than operating their own breeding farm.

**Hatcheries**

Hatcheries incubate fertile eggs collected from the commercial layer parents. Day old chicks are first graded and sexed before being vaccinated against Infectious Bronchitis Virus (IBV) and Marek's Disease (MD). The day old chicks are then transported by road transport and occasionally by air from the commercial layer hatcheries, that exist in NSW and Victoria, to commercial layer farms located throughout Australia. A small number of day olds are also exported overseas.

The buildings are washed and disinfected at the end of a batch.

**Pullet Rearing**

Day old chickens are placed and reared in either deep litter or cage rearing systems until approximately 16 weeks of age after which they are transferred to production farms for egg laying. During the rearing period the pullets (immature layers) are vaccinated against a number of endemic diseases. These may be given via injection, eye drop or through the drinking water. Newcastle Disease (NDV) vaccination is also undertaken being mandatory in Australian commercial chickens. Pullets may be reared for in house use or on sold to layer farms. Pullets are most commonly reared under lighting conditions to eliminate the natural seasonal influence. Mortalities for this rearing period range on average from 1.5 to 5%.

**Layers**

Layers are maintained in production houses generally from 17 until 74 weeks of age. Some flocks may be moulted at around 50 to 60 weeks of age and then brought back into production until up to approximately 100 weeks of age. Moulting is not as commonly practiced in Australia as it is in some other overseas countries. The flocks in the majority of layer houses are on a constant lighting program of 16 to 17 hours for the life of the flock. Mortalities through lay are generally less than 0.1% per week in cage systems. Mortalities in alternative systems are generally higher.

In all egg production systems, after approximately 12 months, the birds naturally moult and are removed for processing or sold off as 'spent hens'. In addition to spent hen usage in food processing, anecdotal evidence suggests that spent hens are also sold (as pets) as the hens may continue to lay eggs for a further few years.

**Inputs**

On-farm inputs are a key part of egg production. These include both intentional inputs, such as feed, water and veterinary chemicals as well as unintentional inputs or contaminants from environmental and agricultural sources such as feed, dirt and water.

Feed rations are developed for various stages of lay to ensure optimal production and egg quality throughout the laying period. The composition of chicken feed varies according to age and habitat.

In general, layers receive a diet of around 16% protein and energy of 2750 kcal and the raw materials making up the diets consist of vegetable proteins such as soybean meal, meat meal, cereal grain, legumes, limestone for calcium and vitamins and minerals. Birds may be vaccinated via the drinking water for infectious bronchitis virus every 8 weeks during lay.

**Types of egg production**

*Cage*

The majority of egg production systems (nationally) are cage systems as they are currently the most cost-effective system of egg production in Australia.

Sheds fitted with the older style conventional cages have either to be converted to meet the new requirements for cages, converted to barn or free range or no longer used. This is in order to meet the ARMCANZ decision, based on the Model Code of Practice for Welfare of Animals – Domestic Poultry (PISC, 2002), that all standard cages that do not meet the requirements as specified in State and Territory legislation need to be decommissioned by 1 January 2008. After this time, all egg farms using cage hens are required to meet the new standard which includes requirements for design and cage size (for example, cages must provide 550 $cm^2$ per hen).

Sheds fitted with modern cages usually have computerised climate control with tunnel ventilation and automated feeding systems. Many are fitted with manure belts under the cages which collect the manure and automatically remove it. A drying system may also be fitted which removes moisture from the manure to optimise the shed environment and improve production.

Cages are designed to allow eggs to roll clear from the hens for daily collection. Collection may be manual or via conveyer belts. Anecdotally, modern cage systems show approximately 15% increased production to the old cage systems and cage systems generally show 15% higher production than free-range systems. Smaller cage farms may have about 4000 layers, whereas the new, fully automated large cage egg producers are planning to house 700,000 birds per operation.

In some cases, all the birds are removed at the end of the batch (‘all-in, all-out’ system), and some systems have birds of mixed ages in the same shed, albeit in different cages and cage level.

*Omega 3 and Vegetarian Eggs*

These niche market eggs are usually sourced from caged laying hens. The essential difference in these eggs lies in the hen’s feed mix. Omega 3 eggs are distinguished by the inclusion of ingredients which contain higher proportions of omega 3 and Vitamin E than normal eggs.

This is provided by including linseed/flaxseed oil or supplements to the diet. Omega 3 eggs contain higher levels of two long chain fatty acids, eicosapentaenoic acid and docosahexaenoic acid.

Vegetarian eggs are distinguished by the absence of meat or fish products in the hen's diet. Dietary protein, often provided by ground meat meal for regular egg production, is replaced by soy protein for vegetarian egg production.

*Barn-laid*

In barn systems, hens are generally group-housed in sheds with nesting boxes with litter, perches and dust baths so the birds can express normal chicken behaviour. The stocking rates should not exceed 30 kg/$m^2$ to comply with *Model Code of Practice for the Welfare of Animals – Domestic Poultry*[31]. Many barn-laid systems have automated nesting, feeding, egg collection and watering systems.

*Free Range*

Free range flock sizes are, on average, much smaller than in the other systems; typically being 1000 – 7000 birds, with a few of the larger farms having as many as 20,000 to 100,000 birds.

Free-range systems comprise weatherproof sheds where hens can roost, lay, drink and eat and there are open-air outdoor ranges adjoining the sheds. The sheds serve as a shelter from the elements and predators, while the free-range area allows hens access to open space and vegetation. The maximum stocking density for free range is 30 kg/$m^2$ in the shed and it is recommended that the range area should not have a stocking density in excess of 1500 birds/ha (PISC, 2002). Many free-range systems have automated nesting, feeding, egg collection and watering systems.

Free range hens expend greater energy and therefore consume more feed than cage hens. Some producers may choose to feed free range hens a higher protein diet (~18% protein) to meet their energy requirements. This cost adds to the overall higher cost of free-range systems; costs resulting from less production (by approximately up to 15%) than the cage system.

*Organic Eggs*

Organic eggs come from farms which have qualified for Free Range status. In order to be accredited as an organic egg producer, eggs must be produced under a system with feed guaranteed to be free of chemicals and containing no added synthetics, no growth promotants, no antibiotics and only feed accredited as being from certified organically grown grain.

**Egg collection and handling on farm**

Eggs are moist immediately after lay, a factor contributing to their soiling, dependent upon the presence of contaminating material in the surrounding environment (Dawson et al, 2001).

[31] http://www.aecl.org/Images/domestic%20poultry%20code.pdf

The positioning of the cage roll-outs (the sloping floor of the cage that transports the eggs to collection belts or to a point for manual pick-up) relative to the feed source is important in terms of the potential for faecal contamination of eggs (Dawson et al, 2001).

Eggs are traditionally collected by hand, however this inefficient and expensive method has been replaced in many cases with automated systems, even with barn-laid and free-range farms. A conveyer belt gathers the eggs from the laying box inside the shed and transfers the eggs, soon after they are laid, to a central handling area.

Free range and barn eggs may be laid outside the cages and potentially could be covered by litter and not 'freshly' collected.

Therefore, the degree of egg contamination is a function of the cleanliness of the surface onto which they are laid, and the manner in which the eggs are handled after laying.

It is estimated that each step along the production chain introduces potential for damage, or the introduction of cracks, in 2% of the eggs (Andrew Baker, personal communication). Even minute cracks can ultimately be an entry point for environmental contamination. Therefore, care at egg collection to avoid egg damage is important. In some cage systems wires prevent eggs rolling from the cages from hitting into each other.

The on-farm handling process involves exterior checking of the shell for cleanliness and soundness. Some producers then send their eggs to grading floors for grading and packing. Some producers grade and pack eggs and sell them off-farm or direct to retail outlets.

**Grading Floors**

After eggs are collected from the egg production facilities they are transferred to grading floors. Here, the eggs are candled[32], cleaned and sorted into batches of different qualities. Eggs are mechanically weighed and sorted into different sizes (grades) and packed accordingly. The specific grade sizes vary from one marketer to another. Between 3 and 5 grade sizes are available. The average weight of an egg is around 60g and most eggs are within the 52 – 65g weight range. The weights marked on the cartons are the minimum weights and are expressed as the total mass per carton.

The range of egg sizes is due to several factors including age of hens (older hens lay larger eggs), breed of hens, diet quality and climate. As a rule, feed consumption is lower in warmer weather, resulting in smaller eggs.

Egg cartons are stamped with a 'use by' or 'best before' date to ensure that eggs are fresh when sent to retail stores and that stock rotation occurs on the grading floor.

Some marketers stamp individual eggs (by hand or automatically at the grading machine) with their minimum weight and/or the symbol for the producer or grading floor responsible for grading.

[32] Eggs are candled to determine the condition of the air cell, yolk, and white. Candling is done in a darkened room with the egg held before a light. The light penetrates the egg and makes it possible to observe the inside of the egg. Candling detects bloody whites, blood spots, or meat spots, and enables observation of cracked shells. Any of these defects result in the removal of the egg. Electronic candling methods also exist.

**Egg cleaning and sanitising**

Egg cleaning is described in the (voluntary) Code of Practice for Shell Egg Production, Grading, Packing and Distribution (AECL, 2005b). Cleaning may be either by a wet washing or dry cleaning method. It is thought by some that wet washing may remove the 'bloom' from the egg shell making it easier for bacteria to get inside the egg through the pores. It is important that the cleaning or washing process is carried out correctly so that bacteria that could be present on the outside of the shells or chemicals from the sanitiser do not gain entry into the eggs. The temperature of the wash solution must be kept above that of the egg and its contents to ensure that extraneous matter is not 'sucked' into the egg.

The Code of Practice states that both dry cleaning and wet washing can be carried out as follows:

*Dry Cleaning Eggs*

- If eggs are not washed, dirty eggs can be cleaned using a dry abrasive method. A clean, dry, sanitised cloth or other suitable material can also be used;
- The equipment used to clean eggs that are not washed shall be sanitised or disposed of on a daily basis.

*Wet Egg Washing and Sanitising* (see Table 8)

- Water used for washing eggs shall be free from pathogenic micro-organisms or toxic chemicals;
- The washing process shall be mechanised and continuous. Eggs shall not be allowed to stand or soak in the wash water. The machine must be cleaned and sanitised after use.

The AECL Code of Practice gives an example of temperatures to be used for a three stage shell egg washing and sanitising process, such that washing takes place at 42$^{o}$C, sanitising at 45$^{o}$C and rinsing at 47$^{o}$C, although washing regime specifications (e.g. – temperature, time, sanitiser concentration) may vary between facilities based on their experience and the equipment used.

**Table 8: Egg washing procedure given in the AECL Code of Practice**

| Machine Type | Washing | Sanitising | Rinsing |
|---|---|---|---|
| Single Stage | | Water temperature 41 – 44$^{o}$C. Use of a chlorine-based sanitiser specifically for use on eggs. Eggs air dried/mechanically dried. | |
| Two Stage | | Water temperature 41 – 44$^{o}$C. Use of a chlorine-based sanitiser specifically for use on eggs. | Pathogen-free water 2-3$^{o}$C higher than sanitising water. Eggs air dried/mechanically dried. |
| Three Stage | Water temperature 41 - 44$^{o}$C. Egg detergent. | Water temperature 3-4$^{o}$C higher than wash water. Use of a chlorine-based sanitiser specifically for use on eggs. | Pathogen-free water 2-3$^{o}$C higher than sanitising water. Eggs air dried/mechanically dried. |

Anecdotally, it is thought that washing eggs reduces their shelf life. Although washing is carried out at larger egg processing plants, some farmers/packers choose not to wash their eggs and may 'dry clean' eggs with abrasive cloths. In the U.S., washing of eggs is mandatory whereas washing of table eggs is not allowed in Europe.

Waste products from shell egg washing, grading and packing plants include liquid waste from egg washing water, egg shells and liquid waste from equipment cleaning. The egg shell waste may be spun to separate out the shells from the remaining yolk and white which can be transferred to the liquid waste stream. Some processing plants have on-site water-treatment facilities, which treat the water before it is removed as waste.

*Ultraviolet sanitising*

In modern processing plants, there is an increased usage of in-line ultraviolet sanitation of eggs. This occurs immediately before egg candling.

**Egg carton labelling and traceability**

*Labelling of cartons*

Egg cartons must be labelled in accordance with labelling requirements of the *Food Standards Code*. These include:

- Product description (i.e. eggs)
- Name and address of the producer/supplier
- Lot identification; and
- Storage advice, including a best before or use by date.

National egg labelling standards were endorsed by the Agriculture and Resource Management Council of Australia and New Zealand in March 2001. The standards were developed jointly by the egg industry and the state and territory governments, and have been widely publicised. (AECL, 2006b)

The Standards essentially require the egg production system (cage, barn-laid or free-range) to be clearly printed on the carton and include, either directly on the carton, or through a producer point of contact, a full definition of the production system.

Since the decision in 2001, ARMCANZ and its successor, the Primary Industries Ministerial Council (PIMC), have preferred that the Standards remain voluntary but that industry take a leadership role in implementing them through the AECL's national egg quality assurance program EggCorp Assured.

The ACT and Tasmania have introduced the *Eggs (Labelling and Sales) Act 2001* and the *Egg Industry Act* 2002, respectively which provides that egg packages must be labelled with the production system that was used to produce the eggs (e.g. caged, barn laid or free-range). . The AECL recommends that different egg production methods be identified by labelling (AECL, 2006b).

*Traceability and recall systems*

The Code requires the label on a package of food to include its lot identification for traceability purposes. Food businesses that are wholesalers of eggs are required to have a system to ensure the recall of unsafe food[33]. There are no requirements for traceability systems (tracing product one step forward and one step back) in Chapter 3.

*Determination of the 'best before'* or *'use by' date*

The Code requires labels to bear a best before date or use by date. A 'best-before date' indicates the end of the period during which the food, if stored in accordance with any stated storage conditions, remains fully marketable and retain its quality. A 'use-by date' indicates the end of the period which the food is safe to consume. It is an offence to sell food after the expiry of a 'use by date'.

The majority of brands of eggs state the recommended storage conditions on the carton e.g. that consumers keep eggs under refrigeration to prolong shelf life.

Throughout the production chain, there are a number of factors that have been indicated as affecting the quality or 'shelf-life' of eggs and egg products, for example, time from lay to use, egg washing and refrigeration.

**Quality**

Egg shells are checked for cleanliness, soundness, texture and shape. This is usually carried out on-farm and is repeated at the grading floor. Eggs must be clean and all eggs with cracked or unsound shells are rejected as unsuitable for shell egg sales.

Prior to grading, several quality tests are carried out. Samples from each batch of eggs are tested for freshness, yolk colour, height of thick egg white and shell thickness by checking the Haugh unit measurement (egg quality unit). Eggs are broken onto a level surface and the height of the thick albumen is correlated with the egg weight. A high Haugh unit measurement indicates good egg quality. At the same time, yolk quality is checked for size, shape, colour, outline and defects.

**Packaging**

Eggs are fragile and liable to crushing. Eggs are transferred from farm to grader in open fibre or reusable plastic trays. Eggs are packaged into retail cartons; either fibre or plastic, and then into outer cartons to provide protection and minimise breakage during transport or storage, as well as the migration of odours or taints from other foods.

The traditional egg carton is made from recyclable moulded fibre as it can absorb moisture and prevents the eggs from sweating. While most eggs are still sold in moulded fibre cartons, plastic cartons are also available.

[33] For details of this requirement see Clause 12 Standard 3.2.2 Food Safety Practices and General Requirements and information on this Clause in the interpretive guide to the Standard, Safe Food Australia. www.foodstandards.gov.au

Egg collection, cleaning, grading and packaging are activities which may occur solely at the producer farm or may occur partly on farm and partly at a larger processing facility.

**Storage and Transport**

After cleaning and packing, shell eggs are stored on the grading floor generally under refrigeration.

**Retail/Wholesale**

In most cases, once eggs (not egg products) reach the backdoor of retail, they are not kept under refrigeration. Generally eggs are kept at ambient temperatures in supermarkets (~20$^{o}$C) or other retail outlets (where possibly wider temperature variation may occur)

When egg deliveries arrive, they are usually checked for damaged outer packaging. In larger supermarkets, part of the routine quality assurance check involves ensuring that there is a minimum acceptance date of 21 days from the 'best before date'. Stock on the shelves usually provides the consumer with at least a seven day shelf life.

## Egg Product Manufacturing

**Types of commercial egg products**

'Egg products' refers to processed and convenience forms of eggs for commercial, food service and home use. The Food Standards Code defines an egg product as 'the content of an egg, as part or whole, in liquid, frozen or dried form' (Standard 2.2.2). The types of egg products produced commercially are listed below (AEIA, undated).

- *Shelled hard boiled eggs and egg mayonnaise mixes* (made form the hard boiled eggs and intended for sandwiches). The eggs are steamed, shelled, packed in gas flushed bags and stored chilled.

- *Refrigerated liquid egg products* (for example: egg white, egg yolk and whole egg). The major users are cake, biscuit and pastry goods manufacturers.

- *Frozen egg products* (for example: frozen liquid whole egg, frozen yolk, frozen egg white, frozen salted egg yolk and frozen sugared egg yolk). Major users include pastry cooks, restaurants, hospitals, clubs and food manufacturers. The recommended shelf life is 18 months from date of packing, provided storage is maintained between -15$^{o}$C and -18$^{o}$C until needed.

- *Dried egg products (whole egg, yolk and egg white).* They are used in package cake mixes, packet crumb mixers, biscuits, dry diet meals, health drinks and drink additives. Customers include restaurants, pastrycooks, food and pharmaceutical manufacturers. These products keep fresh for a long time (6 months under cool, dark and dry conditions) without the need for freezing equipment.

- *Speciality egg products* (for example: whole hard-boiled peeled eggs, scrambled egg mix, omelette mix, chopped hard-boiled peeled eggs, pickled boiled eggs and liquid egg whites). These have a wide variety of uses in food manufacturing, catering or food service trade.

- Other *specialty eggs*, produced from duck eggs, include Balut eggs, salted and alkalised eggs. These are traditional Asian foods and have a limited market.

- *Consumer egg products*. These egg products are sold through normal retail channels such as supermarkets and butchers in a convenient form for consumers (for example: liquid egg whites, French crepes, pavlova mix, egg nuggets, egg white and frozen French toast).

**Egg pulp (liquid egg) manufacture**

Eggs sent for pulping are usually the cracked eggs received from farms and/or eggs rejected from the packaging line, such as small or misshapen eggs. In addition, if there are eggs excess to that required for table eggs, they may be pulped and then frozen. Egg pulp may also be supplied for processing from farms that pulp on-site but do not have the facilities to carry out pasteurisation themselves. Cracked eggs for pulping are normally held in cold storage before use, while the intact eggs used for pulping may be stored at room temperature.

The production steps for liquid egg manufacture can differ between facilities. An example of a pulping and pasteurising process is given in Figure 2. Most commonly the egg contents are processed together to produce liquid whole egg, however some facilities have the ability to separate the yolks and whites to produce the respective liquid egg products.

Eggs can be pulped using a centrifuge or ‘gulping’ method whereby the eggs are placed into a centrifuge, the egg is crushed and shell spun off and removed to waste. Equipment also exists that is able to pull the shell apart to release the contents of the egg. This method tends to minimise the contact between the egg contents and the outside of the egg shell. An alternative method of pulping is by crushing the eggs between two belts. After separation the liquid pulp is forced through a filtration process to remove any particles of egg shell and/or membrane before it progresses to the pasteurisation system.

The shelf life of liquid pasteurised pulp is determined by each facilities’ process and subsequent shelf-life testing. Product shelf-life can be subjective and dependent on a variety of factors. These factors can include:

- the time between the egg laying and pulping
- temperature of storage of the eggs/farm pulp,
- cleaning of the eggs prior to pulping,
- method of and time taken to separate the egg contents from the shell and
- time and temperature of pasteurisation.
- temperature control post-pasteurisation

A typical shelf-life is approximately 10 days, however some facilities achieve a shelf-life of approximately one month.

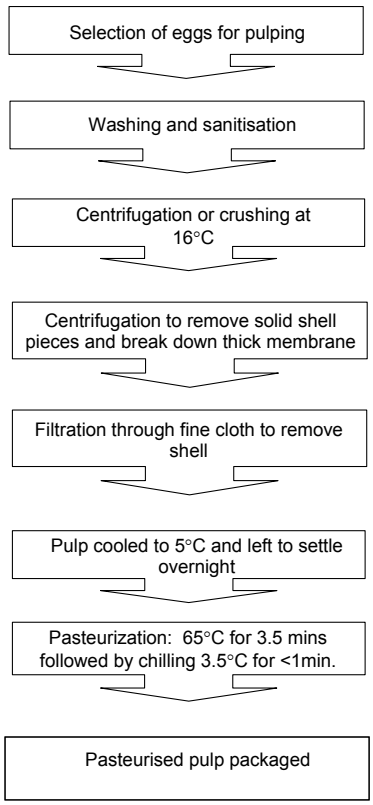


*Figure 2: Generic flow chart of the egg pulping process. Steps may vary between facilities.*

**Egg pulp pasteurisation**

The current requirements in the Food Standards Code for the pasteurisation of egg products are summarised in Table 9.

**Table 9: Pasteurisation conditions for egg products in the Food Standards Code**

| Egg product | Definition in Standard 1.6.2 | Pasteurisation conditions |
|---|---|---|
| **liquid egg white** | The white of egg separated as efficiently as practicable from the yolk in liquid form | 55°C for at least 9.5 minutes followed immediately by rapid cooling to a temperature not greater than 7°C. |
| **liquid egg yolk** | The yolk of egg separated as efficiently as practicable from the white in liquid form | 60°C for at least 3.5 minutes followed immediately by rapid cooling to a temperature not greater than 7°C. |
| **liquid whole egg** (or a mixture of liquid egg yolk and liquid egg white) | The whole egg removed from the shell and includes the product which is frozen or chilled, but does not include reconstituted dried egg. | 64°C for at least 2.5 minutes followed immediately by rapid cooling to a temperature not greater than 7°C. |

Some processors in Australia utilise homogenisation technology post- pasteurisation. The homogeniser physically smashes up the pasteurised pulp (also at 64$^{o}$C) and forces it through pin holes at high pressure (7 tonnes/hour).

The homogenised pulp is then cooled to 3-4$^{o}$C and then refrigerated in sterile bags or 'bladders'. This method achieves a viscous, consistent product which does not separate and has a longer shelf life than non-homogenised products.

For post production cleaning procedures, smaller production operations may use batch processors requiring manual cleaning, whereas the larger in-line processors generally use cleaning in place (CIP) technology. The fully enclosed and automated pasteurisation process has CIP at different stages of the process. An example of a CIP procedure involves a water rinse (15 minutes), a caustic soda wash (25 minutes), and an acid-based sanitizing wash (20 minutes). In general, pre- and post-pasteurisation microbial samples are taken to test for Salmonella (TECRA test) and Total Plate Count (FH1.1/AS1766.2.1-1991). A post-pasteurisation Total Plate Count may be used as an indicator of build-up of product on the plate heater. A test for specific Salmonella phage types is generally carried out if there is a positive result of the pasteurised product. The cost of this high technology cleaning process is estimated to be 45% of the overall production costs (P. McKenna, personal communication).

## Egg production from other avian species

Little detailed information is available about the national production of eggs and egg products from other avian species such as ducks, pigeon, quail and guinea fowl.

The production of duck eggs accounts for less than 1-2 % of total egg production in Australia. There are two main egg-producing breeds: Khaki Campbell and Indian Runner. Ducks are known to be hardy and can potentially produce good egg numbers when groups are small. However, when ducks are raised commercially in larger numbers, production falls rapidly due to the ducks' nervous tendencies (NSW DPI, 2004). Egg production and overall performance is best if breeding ducks are housed together in groups of 250 birds. This is usually under barn conditions where they can be trained to lay their eggs in laying boxes. Ducks start laying at around 18 weeks and are often kept up to 18 months, however unlike hens, they show seasonal fluctuations in laying. Duck eggs are sold at the farm-gate (20%) or wholesale (80%) and fetch higher prices than hen eggs (for example, $4.50 per dozen eggs). The eggs and egg products are perceived as gourmet foods or delicacies, produced as a cottage industry, and are eaten by a small proportion of the population.

### Specialty Eggs

In addition to the sale of fresh eggs from other avian species, there are cottage industries producing processed 'Specialty eggs'. They are a particular delicacy in Asian cuisine produced using duck eggs and are generally known as Salted, Balut and Century eggs.

Salted eggs are produced by soaking duck eggs in a saturated salt solution at 28°C for approximately 4 weeks (Figure 3).

Balut eggs are prepared by incubating at 40°C fertilised eggs for approximately 2½ weeks (Figure 4). This process allows the embryo to continue to grow. The growth is stopped when the egg is removed from the incubated temperatures.

Other specialty eggs include 'Century eggs'. These are also known as preserved eggs, hundred-day eggs or thousand-year eggs.

In some cases the curing process used in the preparation of century eggs has been increased with the use of sodium hydroxide and even the addition of catalysts, such as lead or zinc oxide (Figure 5).

Century eggs are a Chinese delicacy made by preserving duck, hen or quail eggs. They are produced using different production methods and there are several forms (USDA, 2006):

- 'Hulidan' eggs are individually coated with a mixture of salt and wet clay or ashes for a month. This process darkens and partially solidifies the yolks, and gives the eggs a salty taste.
- 'Dsaudan' eggs are packed in cooked rice and salt for at least 6 months. During this time, the shell softens, the membranes thicken, and the egg contents coagulate. The flavour is wine-like.
- 'Pidan' eggs are made by covering eggs with lime, salt, wood ashes, and a tea infusion for 5 months or more. The egg yolks become greenish grey and the albumen turns into a coffee-brown jelly. Pidan eggs smell ammonia-like and are said to taste like lime.

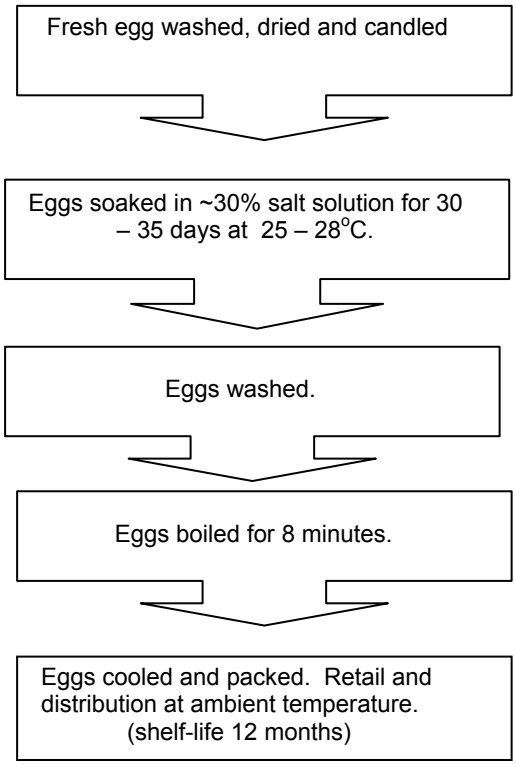


*Figure 3: Example of cooked salted egg production*

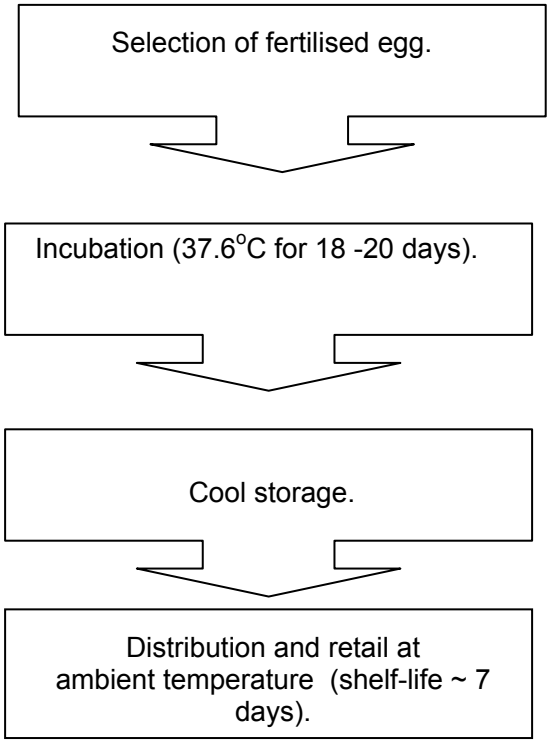


*Figure 4: Example of Balut egg production*

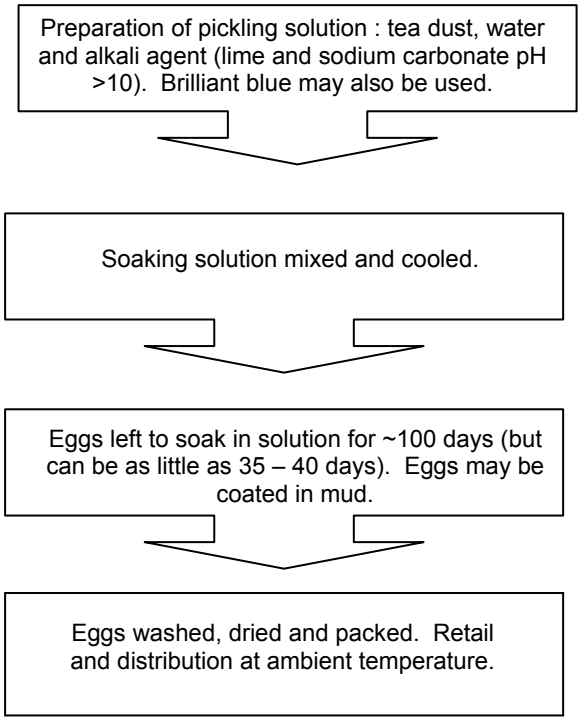


*Figure 5: Example of Century egg production (also known as alkalised, preserved or thousand-year eggs)*

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## Attachment 4

# Current food safety management for the Australian egg and egg products industry

## 1 State and Territory Legislation

The production of eggs and egg products is currently regulated to varying degrees by the Departments of Health and Primary Industries within each State and Territory. Under each State and Territory Food Act unsuitable or unsafe eggs and egg products cannot be sold. Producers and processors must comply with the relevant requirements of the Code, for example, labelling requirements and the prohibition of selling cracked eggs for catering and retail.

Queensland has developed legislation for mandatory Food Safety Schemes for the egg and egg products industries. This Scheme essentially requires primary producers of eggs to be licensed and to implement food safety programs.

The NSW Food Authority has submitted a proposal for a regulatory scheme in NSW for certain egg businesses involved in the production or handling of eggs and egg products to be licensed, subject to periodic inspection and, in cases of higher food safety risk, required to adopt food safety programs and be subject to periodic audit of them. This scheme has yet to be approved for introduction

A summary of State and Territory legislative framework for eggs and egg products is given in Table 1.

The proposed **New South Wales** Scheme, regulates both on-farm egg production activities, egg product processing, and the storage & transport of potentially hazardous egg products or cracked eggs. The proposed Scheme applies certain requirements to producers of more than 20 dozen eggs a week. Specific businesses are required to have food safety programs. The New South Wales Egg Scheme is the only legislation that would specify requirements for the production of Specialty eggs (Century, Salted, Balut eggs). The NSW Food Authority has produced an egg & egg products safety Manual to accompany their Egg and Egg Products Food Safety Scheme).

The **Queensland** Food Safety Scheme for Eggs and Egg Products (Egg Scheme) commenced on 1 January 2005 and is enforced by Safe Food Queensland. The requirements of the scheme (food safety programs) are applicable to on-farm practices including egg production, grading and packaging and transport of eggs and egg products. Food businesses manufacturing egg products are administered by Queensland Health and are licensed by Local Government under the *Food Act 2006*. Unlike the New South Wales scheme, the Queensland scheme encompasses all egg producers, regardless of flock size and/or production quantities. Safe Food Queensland has produced a Workbook to accompany their Egg Scheme.

**Tasmania** has introduced an *Egg Industry Act 2002*[34] which establishes a framework for the egg industry to adopt on-farm Quality Assurance programs.

[34] http://www.dpiwe.tas.gov.au/inter.nsf/WebPages/CART-67DVVB?open

This Act requires 'Egg Production Programs' for on-farm activities (production, grading and pulping) of egg producers keeping more than 20 hens and for off-farm grading. The Egg Production Program must meet the relevant criteria for food safety, animal welfare, biosecurity, environmental impact and labelling standards. Further activities such as off-farm pulping, egg product processing, transport and distribution and retail sales are covered by the Tasmanian *Food Act 2003*.

The **Victorian** Government requires all food businesses, except those of minimal risk, to have food safety programs under the Victorian *Food Act 1984*. This means that egg processing businesses operating in Victoria are obliged to comply with requirements for food safety programs that are consistent with Standard 3.2.1. Primary production businesses are exempt from these requirements.

**Table 1: State/Territory legislation controlling egg producers and processors**

| State/Responsible Authority | Legislation | Application/Requirements |
|---|---|---|
| **NSW**<br>(NSW Food Authority) | *Food Act 2003*<br><br>*Food Regulation 2004* – proposed *Egg and Egg Products Food Safety Scheme* | All egg businesses listed are required to be licensed with the NSW Food Authority. The following egg businesses are required under the Scheme to have a food safety program:<br>- Egg Farms undertaking additional activities e.g. final crack detection, washing eggs, selling off-farm, collection and storage of unpasteurised egg pulp<br>- Egg grading facilities<br>- Egg processors who pulp/further process egg products, including specialty eggs and any food businesses using cracked eggs or unpasteurised pulp as an ingredient in the production of food<br>- 'Egg stores' who receive and/or store potentially hazardous egg products and cracked eggs or both<br><br>Food safety programs are not required of egg farms who do not conduct the final crack detection or egg transporters. However, these businesses do have to meet some requirements for ensuring the production of safe and suitable food as conditions of their licence. |
| **TAS**<br>(Department of Health and Human Services)<br><br>(Department of Primary Industries & Water) | *Food Act 2003*<br><br>*Egg Industry Act 2002* | There are no specific requirements for eggs or egg products under the *Food Act, 2003*.<br><br>The *Egg Industry Act, 2002* requires an 'egg production program' for on-farm activities (production, grading, pulping) that meets the relevant criteria for food safety, animal welfare, biosecurity, environmental impact and labelling standards. The 'food safety criteria' used are those in the AECL National Egg Quality Assurance Program. |

| State/Responsible Authority | Legislation | Application/Requirements |
|---|---|---|
| **QLD**<br>(Safe Food Qld) | *Food Production (Safety) Act 2000*<br><br>*Food Production (Safety) Regulation 2002 – Egg Scheme* | The egg scheme applies for the production of eggs and egg products, including, for example, the following:<br>- rearing a bird at an egg production farm for egg production;<br>- growing stock food at an egg production farm for consumption by a bird to be used for egg production;<br>- producing eggs at an egg production farm, including under a preferred supplier arrangement;<br>- producing eggs at an egg production farm, including under a preferred supplier arrangement;<br>- storing eggs at an egg production farm, egg processing facility or wholesaler's premises;<br>- transporting eggs or egg products—<br>(i) from an egg production farm to an egg processor or wholesaler; or<br>(ii) from an egg processor to a wholesaler; or<br>(iii) from a wholesaler to an egg processor; or<br>(iv) within an egg production farm, egg processing facility or wholesaler's premises; or<br>(v) from an egg producer, egg processor or wholesaler to a retailer, manufacturer or commercial user;<br>- handling eggs or egg products at an egg production farm, egg processing facility or wholesaler's premises;<br>- washing and grading eggs, including assessing eggs for cracks;<br>- off-farm sales of eggs;<br>- processing eggs to produce egg products;<br>- pasteurising egg products.<br><br>A condition of accreditation under the egg scheme requires the business to develop and implement a food safety program. |
| (Queensland Health) | *Food Act 2006* | Food businesses regulated under the *Food Act 2006 (*e.g. egg product manufacturers, retailers) are required to be licensed but not required to have a food safety program. |

| State/Responsible Authority | Legislation | Application/Requirements |
|---|---|---|
| **ACT**<br>(Department of Health/Environmental Health) | *Food Act 2001*<br><br>*Egg (Labelling and Sale) Act 2001* | There are no specific requirements for eggs or egg products under the *Food Act, 2001*.<br><br>The *Egg (Labelling and Sale) Act, 2001* defines the conditions under which hens are for the different production systems. It is an offence to sell eggs produced by a hen that has been kept in a way that is not consistent with these definitions. |
| **NT**<br>(Department of Health & Community Services) | *Food Act 2004* | There are no specific requirements for eggs or egg products under the *Food Act, 2004*. |
| **SA**<br>(Department of Health) | *Food Act 2001* | There are no specific requirements for eggs or egg products under the *Food Act, 2001*. |
| **VIC**<br>(Department of Human Services) | *Food Act 1984* | Food businesses are required to have food safety programs.<br>There are no specific requirements for eggs or egg products under the *Food Act, 1984*. |
| **WA**<br>(Department of Health) | *Food Bill 2005*<br>(will replace *Marketing of Eggs Act, 1945* and *Egg Grading and Packing Code, 1989*) | There are no specific requirements for eggs or egg products under the proposed Act |

## 2 Import and export requirements

(i) Export

Less than 1% of the national egg production is exported. Exports of egg products in 2004 were 1,600 tonnes valued at $5M[35].

Eggs and egg products exported from Australia and intended for human consumption are regulated by the *Export Control Act 1982*. Two Orders made under the Act contain provisions relevant to eggs and egg products: general requirements are contained in the *Export Control (Prescribed Goods – General) Order 2005* and specific egg requirements are contained in the *Export Control (Eggs and Egg Products) Orders 2005*.

The *Export Control (Prescribed Goods – General) Order 2005* covers the administrative areas of legislation that are common to all food commodities including requirements for registration of establishments, trade description requirements, packing requirements and export permits. These orders cover all prescribed goods, including eggs and egg products. The *Export Control (Eggs and Egg Products) Orders 2005*[36] detail specific standards for the preparation of eggs and egg products including food safety and suitability, structural standards, operational hygiene, preparation and transport, product standards, trade description and identification, tracing systems, integrity and transfer requirements. Examples of requirements contained in these standards are given in Table 1.

Establishments where the preparation of eggs and/or egg products for export takes place must be registered under the *Export Control (Prescribed Goods – General) Order 2005*. The occupier of the registered establishment must have an 'approved arrangement' that complies with the requirements for management of food safety and suitability. The minimum requirements for the approved arrangement are to have in place a Hazard Analysis Critical Control Point (HACCP) plan, document control and identification of the applicable requirements of the importing country if they extend beyond the requirements of these Orders.

The *Export Control (Eggs and Egg Products) Orders 2005* only apply to eggs and egg products produced from a hen of the species *Gallus gallus*. The *Eggs and Egg Products Orders* only apply to the export of over 10 litres of egg product, or over 10 kilograms of eggs or egg products in the one consignment, and they do not apply to eggs and egg products exported to New Zealand.

[35] DAFF personal communication

[36] http://www.comlaw.gov.au/ComLaw/Legislation/LegislativeInstrument1.nsf/all/search/2AE749BA1BF70F20CA25707D007AD2EF?OpenDocument.

**Table 2: Examples of requirements for exporting eggs and egg products[37]**

| Export Standards | Examples of requirements contained in the Standards |
|---|---|
| Food safety and suitability | The occupier of the registered establishment must:<br>• Must have a documented HACCP plan and ensure documentation *and* compliance with the importing country's requirements if the requirements of these Orders are not sufficient.<br>• Must have documented management practices, organisational structure, provision of resources and the provision of personnel and their competence. |
| Structural requirements | The premises must:<br>• Facilitate preparation of eggs and egg products that are fit for human consumption;<br>• Permit the premise to be cleaned and sanitised;<br>• Have a waste system that effectively disposes of and, if necessary, treats all sewage and waste, including during peak load;<br>• Have adequate ventilation to effectively minimise the risk of airborne contamination. |
| Operations hygiene | • A documented program of operations controls for the hygienic preparation of eggs and egg products;<br>• Premises and equipment must be maintained to a standard of cleanliness;<br>• Floors, walls, ceilings, other fixtures and fittings must be cleaned and sanitised whenever it is necessary to do so to prevent the contamination of eggs and egg products;<br>• Hazardous substances must not contaminate eggs and egg products. |
| Preparation and transport | • Eggs and egg products must not be sourced from where it is believed they can be contaminated by potentially harmful pathogens, or potentially harmful substances such as pesticides, fungicides, heavy metals, natural toxicants or other contaminants;<br>• Cracked eggs cannot be exported as whole eggs;<br>• Cracked egg with leaking membranes cannot be exported as food. |
| Product standards | Unless the importing country specifies alternative requirements, eggs, egg products and ingredients of egg products must:<br>• not exceed the levels stated in the Code for metal or non-metal contaminants, agricultural or veterinary chemicals, food additives, processing aids, vitamins, minerals or added nutrients; and<br>• meet the microbiological limits specified in the Code. |
| Trade description | • Eggs and egg products for export must have a trade description containing specified information;<br>• The list of ingredients must meet labelling and naming of ingredients and compound ingredients that are specified in Standard 1.2.4 of the Code. |
| Identification, tracing systems, integrity and transfer | • Tracing systems must be in place so that eggs and egg products can be identified, traced and, if necessary, recalled. |

[37] This is not a complete list of requirements. A full list is documented in the *Export Control (Egg and Egg Products) Orders 2005*.

(ii) Import

Australian Quarantine and Inspection Service (AQIS)[38] administers Australian quarantine and food safety conditions for the importation of biological products and food products. AQIS provides quarantine and food safety inspection services for the arrival into Australia of animals and plants and their products, including food.

All food that contains egg or egg products imported into Australia must first comply with quarantine requirements (animal and plant health requirements) under the *Quarantine Act 1908* and the amendments compiled in the *Quarantine Proclamation 1998*.

Currently, for quarantine reasons, eggs and egg products are only permitted under certain conditions and an Import Permit is required for all products that contain greater than 10% egg or if there are discernable pieces of egg in the product. Egg products containing less than 10% egg or egg products such as commercially prepared and packaged cakes, biscuits or bread and cake mixes do not require an Import Permit.

In cases where an Import Permit is required (i.e. the product contains greater than 10% egg or contains discernable egg pieces), the application to import the product is assessed on a case-by-case basis to determine the relevant import conditions. Current import conditions are listed in Table 3. If the egg product is not listed, the conditions have not yet been set and the product is not permitted to be imported. In general, import conditions for the egg products listed in Table 3 require certification that the required heat treatment has occurred.

Biosecurity Australia is conducting an Import Risk Analysis (IRA) of edible eggs and egg products. The IRA will assess the disease risks potentially associated with the importation of edible eggs and egg products from all countries. Import conditions may be amended and new conditions developed on completion of the IRA.

In addition to quarantine requirements, all food imported into Australia must also comply with the *Imported Food Control Act 1992* (*IFC Act*), which requires food to comply with the Food Standards Code. Imported food is categorised into one of three categories: Risk, Active Surveillance or Random Surveillance. FSANZ advise AQIS when an imported food is a Risk or Active Surveillance Category and these are referred to AQIS at the rates of 100% and 10% respectively. Random Surveillance foods are inspected at a rate of 5% of consignments.

Under the *IFC Act*, imported egg products are currently referred to AQIS Imported Food Programme for inspection at the rate of 10% of consignments. They are visually inspected for compliance with the Food Standards Code (e.g. visual check and labelling) and all liquid (i.e. pulp) and powdered egg products are tested for *Salmonella*.

[38] http://www.aqis.gov.au/icon32/asp/ex_QueryResults.asp?Commodity=eggs&Area=All+Countries&EndUse=Human+consumption&QueryType=Search

**Table 3: Import conditions for eggs and egg products[39]**

| Product | Specified treatment | Restrictions |
|---|---|---|
| Spray dried egg white | Spray dried and then hot boxed in its final packaging to a minimum core temperature of:<br>– 70°C for 7 days; or<br>– 62°C for 10 days | Processing plant must be approved by AQIS. |
| Spray dried whole egg and egg yolk powder | Heated to a minimum core temperature of not less than 70°C for 120 minutes | USA, Denmark, Belgium, Canada and New Zealand only. Processing plant must be approved by AQIS or: USDA, EU, Agriculture Canada or New Zealand MAFF. |
| Pasteurised egg products - whole egg, egg yolk and egg white products | Products were processed as follows:<br>– Liquid whole egg: 64°C for a min of 2.5 minutes<br>– Liquid egg yolk: 60°C for a min of 3.5 minutes or 60.5°C for a min of 3 minutes<br>– Egg white: 55°C for a min of 9.5 minutes | New Zealand only |
| Whole boiled eggs | Heat processed so that a minimum core temperature of 80°C was reached or the product was cooked in water where the water maintained a temperature of at least 97°C for at least 17 minutes. | New Zealand only |
| Canned/retorted egg products | During the canning/retorting process, the product was heated to a minimum core temperature of 100°C, obtaining an $F_0$ value of at least 2.8 | |
| Egg pasta or noodles (up to 20% egg) | Cooked by a process sufficient to raise the core temperature of the noodles to at least one of the following temperatures:<br>– 87°C for 2 minutes 30 seconds; or<br>– 75°C for 15 minutes; or<br>– 60°C for 5 hours; or<br>– 60°C for 30 minutes followed by 54°C for 5 hours | |
| Egg waffles | Baked at 250°C for at least 140 seconds | |
| Mooncakes with egg content | – Immersed in solution of 1 kg salt per 2 litres water for a period not less than 20 days; and<br>– Yolks removed from eggs and oven cooked at 180°C for a period of not less than 15 minutes; and<br>– Cooked yolks and other ingredients moulded to form the cakes which are to be baked in an oven at not less than 180°C for a period of not less than 30 minutes. | |

[39] Import conditions can be found at www.aqis.gov.au/icon32/asp/ex_querycontent.asp.

## 3 Quality assurance schemes and Codes of Practice

(i) Quality Assurance Schemes

Hen egg producers are represented at a national level by the Australian Egg Corporation Limited (AECL). The Corporation has developed a National Egg Quality Assurance Program (NEQAP) to help commercial egg businesses develop a quality assurance program for their respective operations in the supply chain. The program addresses issues including food safety, biosecurity, animal welfare and egg labelling in order to set a minimum standard for the whole egg industry. The program is based on HACCP principles and covers on-farm practices relating to pullet rearing, egg production and egg grading/packing.

Businesses which implement the NEQAP Program are able to apply to become licensed as an 'Egg Corp Assured' business[40]. This is a voluntary licensing system offered by the AECL, whereby egg businesses must develop a quality assurance program that is consistent with the National Egg Quality Assurance Program. The programs must be audited by a registered third party auditor. Once licensed the business is then able to display the Egg Corp Assured logo on their packaging, labelling and marketing material. As of October 2006, there were 99 Egg Corp Assured licensed egg businesses.

Victoria has also developed 'Hen Care' a quality assurance system that includes a guide to through-chain food safety practices. Hen Care will be launched in late 2006 by the Victorian Farmers Federation.

(ii) AECL Codes of Practice

In addition to State and Territory legislation, the AECL has developed Codes of Practice as a voluntary means of assisting producers to meet the general provisions of the Food Act and/or Regulations in their State/Territory. The Codes of Practice relating to egg safety are:

- Shell Egg Production, Grading, Packing and Distribution, and
- Manufacture of Egg Products[41].

These Codes provide guidance on the hygienic production, storage, packaging and distribution of shell eggs and egg products intended for human consumption and sets minimum standards of hygiene.

The Codes of Practice use have been developed using a HACCP-based food safety program approach to address food safety hazards and hygienic practices from feed and breeding flocks/hatcheries and receipt of raw materials through to the final consumer. Each Code of Practice is divided into production process steps. Hazards are identified at each step and suggestions are given for appropriate control measures for each. The hazards that are deemed to be critical to the production of safe eggs and egg products are identified as control or safety points.

[40] (AECL, 2006) http://www.aecl.org/index.asp?pageid=391

[41] AECL (2005) http://www.aecl.org/index.asp?pageid=486. These documents are Codes originally developed in Victoria and adopted nationally through the AEIA. They are included in the NEQAP program.

(iii) International Code of Practice

The Codex Alimentarius Commission[42] Committee on Food Hygiene is considering a Revised Draft Code of Hygienic Practice for Eggs and Egg Products. This document covers the hygienic production and processing of eggs and egg products of domesticated birds, intended for human consumption and applies to all egg producers and processors, regardless of size. Australia has contributed to the development of the Codex Code of Practice to ensure it reflects safe practices in the Australian egg and egg products industries.

Australia is required to consider the Codex Code when developing national standards. Therefore, the requirements on egg production and processing in the Revised Draft Code of Hygienic Practice for Eggs and Egg Products will be considered during the development of the Primary Production and Processing Standard for Eggs and Egg Products.

(v) Code of Practice for Biosecurity

In response to previous outbreaks of exotic and endemic diseases and acknowledging the need for improved biosecurity programs, the Rural Industry Research and Development Corporation (RIRDC) developed the Code of Practice for Biosecurity in the Egg Industry at the request of the Australian Egg Industry Association (AEIA)[43]. This code aims to assist egg farmers or enterprises to develop and adopt an appropriate Biosecurity Plan, based on HACCP principles, for their starter pullet and egg laying farms.

The Code identifies the critical monitoring points to be addressed in a biosecurity program which are:

- entry of chicks, litter, equipment, vehicles, people and feed into started pullet farms;
- entry of litter, started pullets, adult fowls, equipment, vehicles, people and feed into egg production farms;
- the presence of wild birds and rodents in sheds or where hens and pullets range;
- water sanitation on farms using surface water for internal shed fogging or bird drinking water;
- disposal systems for dead birds, reject eggs and manure from the farm; and
- the presence of non-poultry bird species, other poultry and pigs on the farm.

(vi) Other Codes of Practice

Other Australian Codes of Practice exist such as the Model Code of Practice for the Welfare of Animals – Domestic Poultry, the Model Code of Practice for the Welfare of Animals – Land Transport of Poultry and the National Standard for Organic and Bio-dynamic Produce (2005).

[42] The Codex Alimentarius is the international body whose purpose is protecting the health of consumers, ensuring fair trade practices in the food trade, and promoting coordination of all food standards work undertaken by international governmental and non-governmental organizations. The Codex Alimentarius commission develops food standards, guidelines and related texts such as codes of practice under the Joint FAO/WHO Food Standards Programme.

[43] http://www.rirdc.gov.au/reports/EGGS/01-109.pdf

## ATTACHMENT 5

# Specific topics and questions for risk assessors

### EGG PRODUCTION AND COLLECTION

1. *Potential hazards and risks to egg safety and suitability arising from breeding flocks*
   - 1.1 Potential for microbial and chemical contamination of eggs to be passed from breeding stock to egg layers.

2. *Potential hazards and risks to egg safety and suitability from different types of egg production methods*
   - 2.1 Potential hazards and subsequent risks of having mixed age hens in one shed (not enabling complete cleaning of sheds between flocks).
   - 2.2 Potential hazards and subsequent risks associated with the production of caged, free-range and barn-laid eggs, including omega 3, organic or vegetarian eggs.
   - 2.3 Impact of different environmental conditions on these hazards
   - 2.4 Potential hazards and subsequent risks from use of agricultural and veterinary chemicals and other chemicals associated with different egg production methods.

3. *Potential hazards and risks to egg safety and suitability from waste and cleaning of sheds*
   - 3.1 Potential hazards and subsequent risks of manure build-up in cage systems and the impact of cleaning systems.

4. *Potential hazards and risks to egg safety and suitability from egg collection and handling on farm*
   - 4.1 Potential hazards and subsequent risks for eggs collected from conventional litter floor environments in comparison to those from cage systems.
   - 4.2 Impact of personal health and hygiene of egg handlers on egg safety.
   - 4.3 Potential hazards and subsequent risks associated with cracked or dirty eggs bought at the farm-gate.
   - 4.4 Potential hazards and subsequent risks associated with broken eggs and egg pulp collected on farm intended for processors (if this occurs).

### EGG DRY CLEANING, WASHING AND SANITISING[44]

5. *Potential hazards and risks to egg safety and suitability from egg cleaning and sanitising*
   - 5.1 Potential hazards and subsequent risks hazards associated with washing or not washing eggs.
   - 5.2 Potential hazards associated with the practice of oiling eggs
   - 5.3 Effectiveness of ultraviolet light as a means of sanitising eggs.

[44] This may occur on the production farm or at the grading floor.

## EGG GRADING AND PACKAGING

*6. Potential hazards and risks to egg safety and suitability from grading, packaging and packaging systems*

6.1 Potential chemical and microbiological hazards and subsequent risks associated with grading, packing of eggs and egg products.

6.2 Specific contamination (microbiological and chemical) hazards and subsequent risks associated with egg packaging material including reuse of trays and cartons.

## STORAGE THROUGHOUT THE CHAIN (ON-FARM, GRADING FLOORS, WHOLESALE AND RETAIL)

*7. Potential hazards and risks to safety and suitability during storage of whole shell eggs, cracked eggs, dirty eggs and broken eggs*

7.1 Potential hazards and subsequent risks from storing eggs at ambient temperature including consideration of shelf life (for safety reasons) at ambient temperature.

7.2 Potential hazards and subsequent risks from storing eggs at lower temperatures including consideration of shelf life (for safety reasons) at these temperature[45].

7.3 Potential hazards and subsequent risks from condensation developing on eggs which have come from a refrigerated environment into a warmer (+20$^{o}$C) atmosphere and stored at retail/wholesale.

## DISTRIBUTION AND TRANSPORT

*8. Potential hazards and risks to egg safety and suitability from transport*

8.1 Potential chemical and microbiological hazards and subsequent risks associated with the transport of eggs and egg products.

## EGG PRODUCT MANUFACTURING/PROCESSING

9. Microbiological and chemical hazards and subsequent risks associated with producing egg products from shell eggs at processing facilities taking into account the current time-temperature requirements specified for liquid whole egg, liquid egg white and liquid egg yolk:

9.1 Potential hazards and subsequent risks associated with using cracked eggs for processing

9.2 Potential hazards and subsequent risks with using broken eggs.

9.3 Potential hazards and subsequent risks associated with using dirty eggs

9.4 Potential hazards and subsequent risks associated with centrifuging of eggs, or other crushing methods of pulping where the shell comes into full contact with the egg content during separation.

9.5 Potential hazards and subsequent risks from chemical residues from cleaning or other egg processes

[45] Advice to the industry in industry codes of practice is to store at 20°C or below after lay, during transport and at retail in conditions which avoid condensation.

9.6 Potential hazards and subsequent risks associated with manufacturing egg products produced from shell eggs or egg pulp.

**EGGS AND EGG PRODUCTS FROM OTHER AVIAN SPECIES AND SPECIALTY EGG PRODUCTS**

10. Potential hazards and subsequent risks associated with egg production of other avian species.
11. Potential hazards and subsequent risks associated with the production, processing and handling of speciality eggs.

**Attachment 6**

## Egg & Egg Products Standard Development Committee

**Chairperson: Mr Graham Peachey, Chief Executive Officer, FSANZ**

**GOVERNMENT**

| NAME | POSITION | ORGANISATION |
|---|---|---|
| Mr Bill Calder | Manager<br>Dairy Safety Branch | Department of Health, Western Australia |
| Mr Scott Channing | Senior Policy Officer,<br>Food Regulation & Safety | Department of Agriculture, Fisheries & Forestry Australia (DAFF) |
| Mr Brian Delroy | Principal Food Safety Advisor, Food Policy & Programs Branch | Department of Human Services, South Australia |
| Mr Paul Dowsett | Food Safety Officer | Department of Primary Industries and Resources South Australia |
| Dr Nora Galway | Imported Food Program | Australian Quarantine Inspection Service (AQIS) |
| Ms Melissa Langhorne | Manager, Health Protection Services | ACT Health |
| Mr Chris Lyall | Manager, Food Safety | Department of Primary Industries and Water, Tasmania |
| Mr Phil Pond | General Manager<br>Strategy, Policy & Development | Safe Food Queensland |
| Mr Bill Porter | Manager, Regulatory Affairs | NSW Food Authority |
| Ms Kathleen Shaw | Senior Advisor, Food Safety | Department of Health and Human Services, Tasmania |
| Mr Russell Stafford | Epidemiologist | Department of Health and Ageing / OzFoodNet |
| Ms Susannah Tymms | Senior Analyst Food Policy, Agriculture Industry Policy Group | Department of Primary Industries, Victoria |
| Ms Sharon Wagener | Program Manager (Animal Products), New Zealand Standards Group | New Zealand Food Safety Authority |
| Ms Tracy Ward | Senior Policy Officer, Environmental | Department of Health & Community Services, Northern |

| NAME | POSITION | ORGANISATION |
|---|---|---|
| | Health Branch | Territory |

**NON-GOVERNMENT**

| NAME | POSITION | ORGANISATION |
|---|---|---|
| Mr Glen Abbott | National Business Manager | Farm Pride Pty Ltd, Victoria |
| Ms Christene Cantarella | Director | McLean Farms, Queensland |
| Mrs Ivy Inwood | President<br><br>Chairperson | Free Range Egg & Poultry Association of Australia<br><br>Queensland Egg Farmers Association Inc |
| Mr James Kellaway | Managing Director | Australian Egg Corporation Ltd (AECL) |
| Ms Azadeh Laghai | Technical Services Manager | SunnyQueen Pty Ltd, Queensland |
| Mr Paul Maher | Site Manager | Pace Farm Pty Ltd,<br><br>New South Wales |
| Mrs Meg Parkinson | Deputy President<br><br>President<br><br>Vice President | Victorian Farmers Federation<br><br>VFF Egg Producer's Group<br><br>Free Range Egg & Poultry Australia Ltd |
| Dr Peter Scott | Research Fellow<br><br>Managing Director | University of Melbourne<br><br>Scolexia |
| Mr Con Tamvakis | | Micro-Range Farmers Association |
| Mr Steven Todd | General Manager | Southern Egg Pty Ltd, South Australia |
| Ms Mandy Tyack | Quality Coordinator | Golden Egg Farms, Western Australia |
| Mr Joe Vella | Committee Member | NSW Farmers Association |
| Ms Rachelle Williams | Member | FSANZ Consumer Liaison Committee |

**Attachment 7**

## Egg Scientific Advisory Panel

| Member | Organisation | Expertise |
|---|---|---|
| Dr Marion Healy | FSANZ | Chairperson<br>Risk assessment |
| Mr Paul McKenna | Industry | Egg processing industry knowledge |
| Mr Glen Abbott | Industry | Egg processing industry knowledge |
| Dr Peter Scott | Industry | Animal health, on-farm knowledge and practices |
| Mr Mark Veitch | Melbourne Diagnostic Unit | Human health epidemiological expertise |
| Associate Professor Julian Cox | UNSW | Microbiological expertise |
| Mr Ben Daughtry | SARDI | Risk assessment and microbiological expertise |
| Mr Bernie Davis | Consultant | Egg industry knowledge,<br>Government |